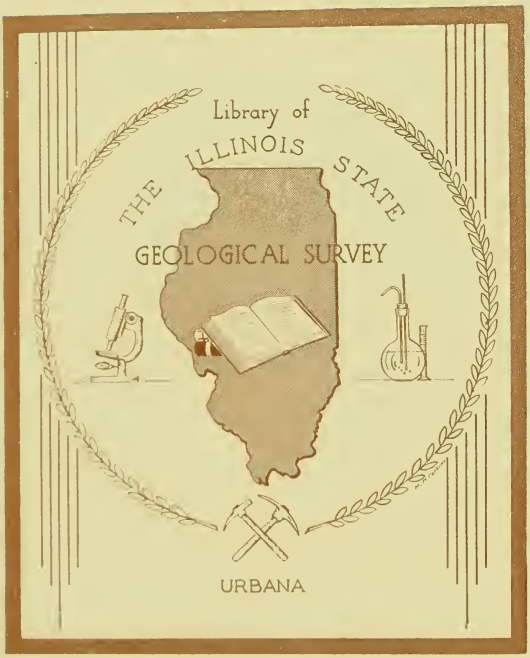
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MINERAL PRODUCTION IN ILLINOIS IN 1954

by

W. H. Voskuil
W. L. Busch

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W. H. Voskuil and W. L. Busch

ABSTRACT

The annual report of mineral production in Illinois is a summary of the output and value of Illinois mineral products. The minerals include coal, petroleum, natural gas, stone, silica sand, lime, cement, clay products, sand, gravel, fluorspar, and metals. Brief economic analyses of the mineral industries are accompanied by maps, tables, and graphs. A directory of Illinois industrial minerals producers reporting production for 1954 is included.

THE ILLINOIS MINERAL INDUSTRY

We can appreciate and understand the value of Illinois minerals and the Illinois mineral industry if we take the time to examine the background and the foundations of the region in which we live. The area that comprises Illinois and its neighboring states of Wisconsin, Indiana, Minnesota, Iowa, Missouri, and Kentucky is one of the richest in the world. The combination of wide expanses of fertile soil, level topography, generous rainfall, and favorable temperatures found here is present in only a few other places in the world.

Agriculture is one of the basic industries in the area and a major contributor to the high standard of living. The products of agriculture are sold not only to the people of the large urban-industrial areas, including Chicago, St. Louis, Milwaukee, Indianapolis, Peoria, and Springfield, but are also shipped to the eastern United States and exported abroad, thereby returning a large income to the farmers.

Most important in this highly productive economy is the unusually fertile soil of the area. The natural fertility was so high that only in comparatively recent time has the liming of the soils been practiced widely; substantial use of nitrogenous, phosphate, and potash fertilizers is even more recent.

The level topography, also, has favored the development of high agricultural production. The gasoline-powered tractor and a heavy investment in power-driven machinery has become standard on a majority of farms in the Midwest. The output of the farmer has been increased to a remarkable extent by farm equipment, agricultural limestone, and fertilizers. "Possibly no measure of increased efficiency is so spectacular as that which shows the rise in output per man-hour. Since 1940, for example, the total production of corn and other feed grains has increased about one-fifth, the man-hours

used to produce them have been reduced by more than one-half, and the output of feed-grains per man-hour has increased nearly three-fold."*

Climate

Rainfall for crop production is adequate and well distributed. The average annual rainfall is more than 40 inches on the southern edge of the Midwest region. This covers the southern part of Illinois and Indiana and the southern half of Missouri. From 30 to 40 inches of rain falls over most of the area occupied by Wisconsin, Iowa, and the remainder of Illinois, Indiana, and Missouri. The line of 20-inch rainfall, usually considered as the lower limit of arable agriculture, runs through the Dakotas and Nebraska, considerably west of our region.

Temperature differences within the Midwest are wide and exert a strong effect on the productivity of the land. The higher temperatures of the southern part of the region permit that area to excel in the production of many high-value crops including corn and soybeans.

Importance of Water Resources

We have mentioned the importance of water for crop production - but the need for water goes far beyond agriculture and includes electric power production, mining and quarrying, transportation, and manufacturing. Water, of which the Midwest has adequate supplies, is therefore very important for the prosperity of the area.

Use of water in power production. - Water in large quantities is needed as a cooling agent in the production of electrical power by steam-driven turbines and electric generators. As about 400 to 700 tons of water is needed for each ton of coal used as fuel, steam power plants are often built near large bodies of cool water such as tidewater points, on the shores of the Great Lakes, or on large rivers.

In the use of water for the production of power, a water head and a flow of water are required. The amount of power that can be obtained from an elevated body of water depends upon the height of the water above the water wheel and the volume of water flowing per measured period of time. The usefulness of water flowing from a higher to a lower level in the production of power depends upon the regularity of flow. The amount of power that can be depended upon from day to day is related directly to the amount of water that can be expected to flow continuously. Modification or correction of seasonal variation in flow so as to increase the over-all year-round dependable power is one of the problems of water resource conservation in power supply.

Water in manufacturing. - The location of suitable water supplies is one of the first steps in locating a manufacturing plant. Water in manufacturing operations is used in many ways including washing, quenching, heat exchanging, processing, cooking, shrinking, etc. Industries such as steel, papermaking, textiles, felt-making, canning, leather-tanning, beverages, rayon manufacture, require substantial quantities of water in the course of opera-

*Annual Report, 1954, Federal Reserve Board of Chicago, p. 6.

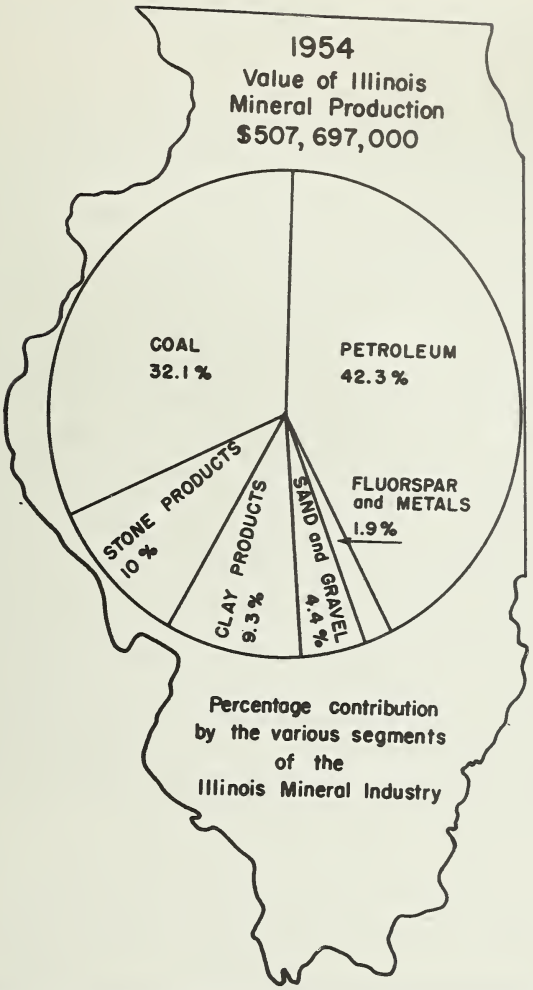

Fig. 1. - Value and source of Illinois mineral production, 1954.

tions. The quality and temperature of the water are important considerations in determining its usefulness in manufacturing operations.

Navigation. - Water transportation, under certain circumstances, is by far the superior form of transportation for bulky raw materials, and it is relatively low in cost. Therefore, the Great Lakes are used for shipping coal and iron ore to the steel centers on lake ports, for moving grain from the granaries of the Middle West to Atlantic ports, and for movement of stone and oil. This excellent navigational system in the heart of the North American continent has done much to shape the geographic pattern of American industry, and has been an important factor in the low-cost production of iron and steel.

There are many rivers in the Midwest now classed as navigable that have been further improved to make them navigable for certain types of water

craft, several of which are used in the transportation of materials. Much money has been spent by state and federal governments to improve streams and water bodies for navigation.

The fact that a large percentage of the nation's population live in urban communities has made the question of adequate municipal water supply one of great importance. About a third of the people live in 90 cities of more than 100,000 population, another third in smaller towns and villages, and the remainder on farms. The latter two-thirds depend extensively on groundwater. The problems involved in getting a water supply for a small community are of local interest, but the same problems may assume regional, national, or even international importance in densely populated sections.

Midwest water supply. - An adequate water supply is available in the Midwest. By adequate water supply, we mean a sufficient quantity and distributed in the places where it is needed. The sources of our water supply are rainfall (30 to 45 inches annually), which accumulates in lake and river reservoirs, and water in underground reservoirs, which was stored there in the past and is being replenished to some extent by rainfall.

For manufacturing and transportation purposes, the distribution of water is also very fortunate. Lake Michigan not only is an inexhaustible supply of water but is part of the Great Lakes route for the cheap movement of bulk ores, coal, oil, and other raw or semiprocessed materials. The Mississippi and Illinois waterways form part of a system of inland waterways that connect Illinois industry with the oil-producing portions of the Louisiana and Texas gulf coasts as well as provide a water highway southward for Illinois manufactured goods. Chicago, Joliet, Peoria, Pekin, Havana, Moline, Rock Island, Quincy, Alton, East St. Louis, Cairo, and numerous smaller cities directly benefit by and make use of the waterways.

Raw Materials and Manufacturing

We have seen that the large and highly productive agricultural industry has laid the foundation for a large purchasing power within the area. Agriculture also supplies the raw materials for a tremendously large group of food-processing industries in Chicago, Milwaukee, St. Paul-Minneapolis, St. Louis and East St. Louis, Indianapolis, Council Bluffs, Omaha, and Kansas City, to mention some of the cities that engage in food preparation.

Land topography and waterways have opened the way for low-cost land and water transportation. More than this, the waterways have linked together by low-cost transportation, a wide array of mineral resources that are the foundation for the manufacture of metal goods, ceramics, glass, cement, and clay products.

Illinois does not have within its own borders all the minerals and ore needed for the manufacture of the metal, ceramic, and other products made in Chicago and downstate cities. In fact, iron ore is lacking altogether, and the production of metallurgical coke for the iron and steel industry is just now getting under way. Illinois' unique advantage lies in the fact that the assembling of mineral raw materials from widely scattered sources is most economically effected here. We have, as a consequence, a large primary iron and steel industry in Chicago and a smaller one in Granite City. The ores of

iron come mainly from the Lake Superior district, and the special type of coking coal to smelt the ores comes principally from West Virginia and eastern Kentucky, although Illinois itself is supplying increasing amounts.

Nonmetallic Minerals

In an industrial society, along with the huge demands for iron ore and fuels, there is a large and growing demand for nonmetallic minerals. A prime example of the need for these materials is housing - industrial, commercial, urban residential, rural, and many other specialized kinds.

Materials used in housing the industrial plant include brick or concrete, haydite, hollow tile, corrugated or sheet steel for outer walls and roofs, glass block, windows, and many similar materials.

Commercial housing includes banks, offices, retail stores, and wholesale houses and all other structures essential to manufacturing, selling, distributing, and financing. Here brick, dimension stone, cement and cement aggregates, plate glass, glass block, asphalt, and steel are the principal construction materials. Insulating materials such as asbestos, magnesium, gypsum, glass wool, and rock wool also are used.

Urban residential housing has become important because of the phenominal growth of large cities in an industrial economy. Because the amount of material required for urban housing has exceeded the lumber supply, the trend is toward the use of earth materials, particularly brick, although stone, haydite, concrete, and even steel also are used.

The development of transportation equipment is characteristic of a manufacturing and commercial agricultural economy. Transportation needs in such an economy are infinitely complex. The production of power and steel alone calls for moving enormous tonnages of raw materials. Half the tonnage carried by railroads is of mineral origin. To this should be added the tonnages of coal, oil, sand, gravel, stone, and cement shipped on lake and inland waterways, and shipments of oil in pipelines. Manufactured goods made of metals and minerals account for an additional 20 percent of rail carloadings.

The extensive railway system has its own large mineral requirements for roadbeds and ballast, for steel and concrete structures, for railway housing, depots, warehouses, etc. The internal-combustion engine and the automobile stimulated the building of vast networks of highways paved with concrete, paving brick, or asphalt on crushed stone and gravel. In a random year, highway construction required 24 million barrels of cement, 1.3 million tons of asphalt, 96 million tons of crushed stone, and 50 million tons of sand and gravel.

Finally, the districts that produce raw materials - farms, mines, and quarries - are building with brick and concrete more than ever before.

The role of Illinois minerals. - In addition to its important contributions of coal and petroleum, Illinois makes an important contribution to the building industries. First in value of these nonmetallic minerals is stone - limestone, dolomite, cement and lime. Second in importance are the clay products - used for structural, refractory, and other purposes. Third in importance is sand and gravel, which includes the silica sands for glass-making and other specialized purposes.

COAL INDUSTRY

Coal in 1954

The coal industry in the United States produced 392 million tons in 1954 as compared with 457 million tons in 1953, a decline of 14 percent. Prices of coal in all market categories - railroad fuels, coking coal, coal used in general manufacturing and in retail trade - declined.

The decline of coal consumption in 1954 is a continuation of the decline that has been going on almost continuously since 1947. In 1947, coal consumption was 546 million tons; in 1954 it was 363 million tons, a drop of 34 percent.

During this period some industries gained in coal consumption, others lost moderately, and several lost heavily. Details of these changes are shown in table 8. Of the several factors contributing to the decline in the use of coal, the conversion of railroad locomotive power from steam to diesel is, no doubt, the foremost. Another factor is the growing use of natural gas and fuel oil in place of coal, especially for space heating. It also is important to note that the rapid growth in the output of electric power conceals the fact of increasing efficiency of electric power production, the coal required declining from 1.31 lbs. per kw-hr in 1947 to 0.99 lb. per kw-hr in 1954.

The effect of these changes in consumption upon coal-producing districts varied according to the types of coal supplied by each major producing district. Pennsylvania dropped from 23 percent of the national market in 1947 to 18 percent in 1954. The output of West Virginia and eastern Kentucky, dominated by the smokeless coals and coking coals, rose from 38 percent in 1947 to 40 percent in 1954. In the Eastern Interior field, comprising the coal-

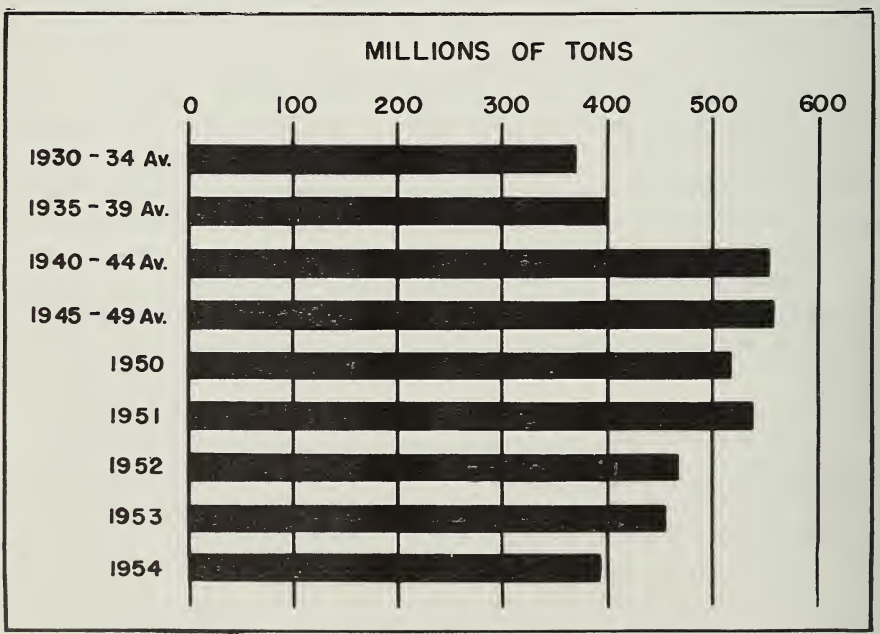

Fig. 2. - National production of bituminous coal, 1930-1954.

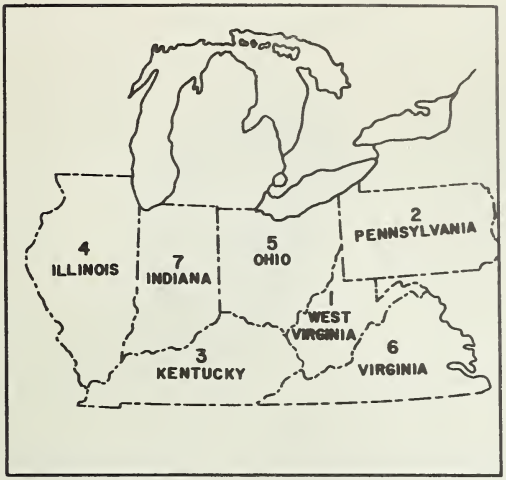

Fig. 3. - The states that produced 90 percent of the nation's bituminous coal, 1954.

producing districts of Illinois, Indiana, and Kentucky, Illinois' percentage of national output remained stationary, Indiana lost, and Kentucky gained.

During the 7-year period of declining markets, the coal industry has been undergoing reorganization and increasing efficiency of production. Decline in coal demand, which is now believed to be near the bottom, has left in its wake a coal-mine capacity considerably in excess of current or anticipated demand. An indicated trend toward a readjustment of productive capacity to demand is shown by reduction in number of mines and concentration of production in low-cost mines - preferably those mines that have the additional advantage of favorable rail or water transportation to market. Twenty-eight major coal companies had about 20 percent of national coal production in 1954 as compared to 8.5 percent in 1947. Machinery has played an important role in this increased productivity.

The continuous-type miner, developed in 1948, is now being used widely in industry. The coal auger has been introduced and, under certain conditions, is proving very useful and highly productive. Roof bolting as a means of supporting the mine roof is proving successful and is more economical than timber supports. Finally, an important contribution to mine productivity and increased efficiency is the over-all coordination of production operations - mining at the face, haulage, preparation, and shipment.

Production in the United States

The record of coal production in the United States for selected years since 1942 is shown in table 3. Preliminary figures for 1954 indicate a decline of about 14 percent from the 1953 level. Coal production for the United States in 1954 is estimated at 392 million tons.

The states east of the Mississippi River produced about 90 percent of the nation's bituminous coal output. West Virginia leads all states with about 30 percent of the total coal produced in the United States. Other top coal-

Fig. 4. - Illinois, Indiana, and western Kentucky coal fields and the main mining districts.

producing states are Pennsylvanian, Kentucky, Illinois, and Ohio (table 3 and fig. 3).

Although competition among the states is keen, there is a certain degree of market specialization, based mainly on the characteristics of their coal. The manufacture of metallurgical coke requires coal obtained primarily from a small area in the Appalachian coal province. Pennsylvania, West Virginia, and eastern Kentucky supply most of the coking coal for the coke ovens and iron works of Pennsylvania, Ohio, and the lake districts.

The Upper Mississippi Valley coal market area includes Illinois, Indiana, Wisconsin, Minnesota, Iowa, Missouri, the eastern Dakotas, and Kansas. Coal for this area comes from the Eastern Interior coal field in Illinois, Indiana, and western Kentucky (table 4) and also from the Appalachian districts. Coal is distributed by rail, rail-lake, rail-river, and truck. Coal is required in the Upper Mississippi Valley for domestic heating, general industrial purposes, railroads, and the manufacture of metallurgical coke.

Eastern Interior Basin

Production of bituminous coal from the Eastern Interior coal field for selected years is shown in table 4. The production history of Illinois, Indiana, and western Kentucky and the contributions of each to the total production of the Eastern Interior Basin from 1913 through 1942 are shown in table 4 of Illinois Mineral Industry in 1942 (Voskuil and Stevens, 1944). Data concerning coal-mining activity in the Eastern Interior coal field from 1942 to date have been given in the annual Illinois mineral industry reports.

Illinois Production

Illinois produced 42 million tons of coal in 1954 and continued to contribute its share to the nation's coal pile by supplying a little over 10 percent of the total (Illinois' average contributions usually range between 10 and 11 percent). In 1953 over 36 percent of the coal produced in Illinois was from

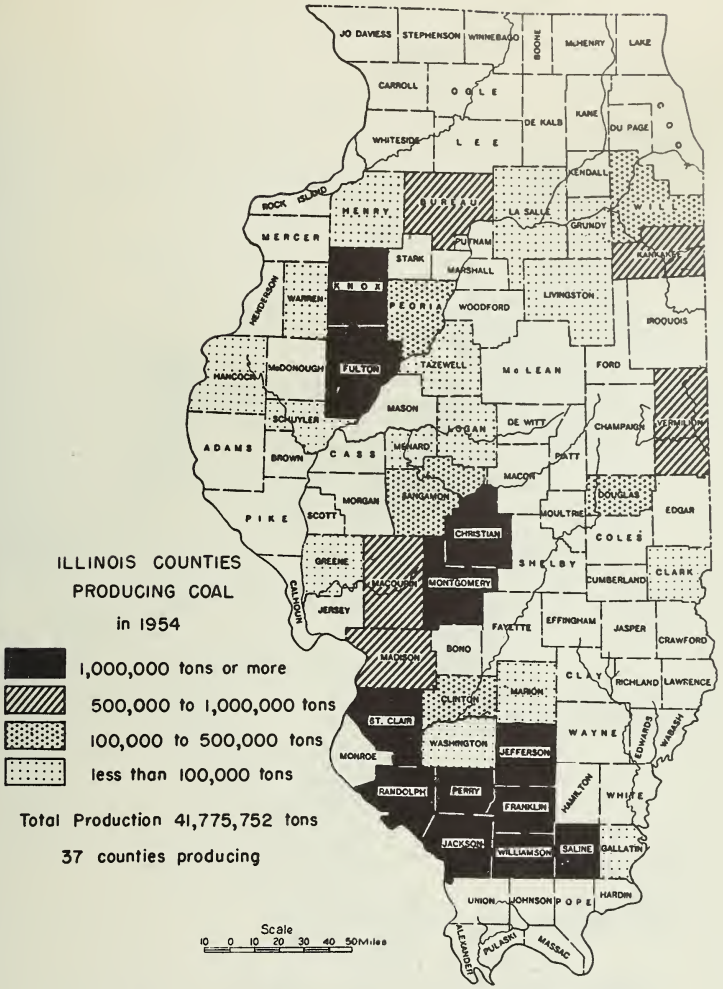

Fig. 5. - Illinois coal production by counties, 1954.

strip mines. However, during 1954 strip mines in Illinois produced 39 percent of the total production.

Table 5 gives cumulative coal production for Illinois, by counties, for the period 1882 to 1954, as compiled from the annual Coal Reports of the Department of Mines and Minerals, and an estimate of production for the period 1833 to 1881. Also shown is the last year of known coal production for any county that has ceased production. Seventy counties have recorded production and 11 of them have produced more than 100 million tons each (fig. 6). Franklin County has the highest recorded production with a total of over 467 million tons. Table 5 also shows the total number of years each county in Illinois has produced coal between 1882 and 1954. A history of coal production by counties and by years was published as table 14 in Illinois Mineral Industry in 1947 (Voskuil, 1949).

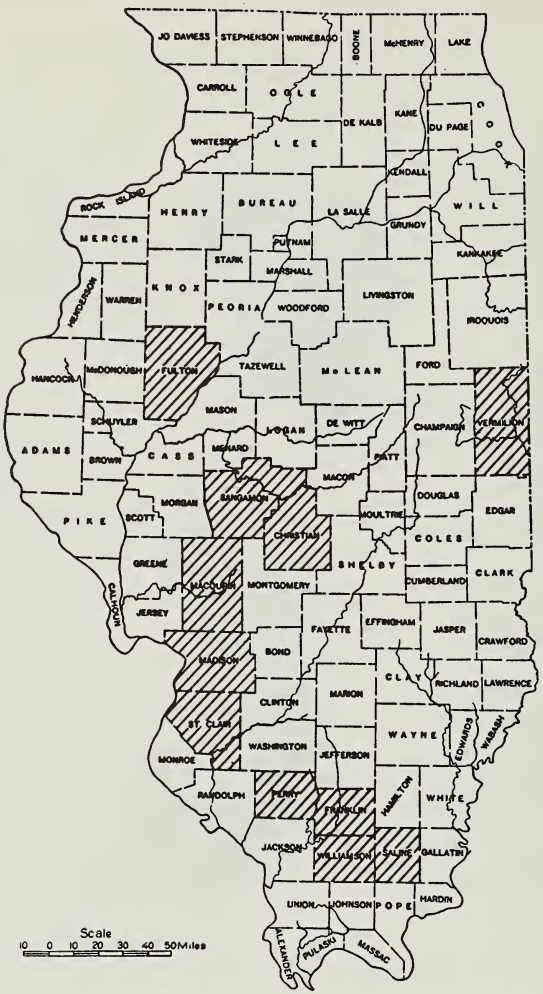

Fig. 6. - Illinois counties that produced 100 million tons of coal each, 1882-1954.

Production by counties. - During 1954, 37 counties in Illinois produced a total of almost 42 million tons of coal. Twelve of the counties produced one million or more tons each and as a group accounted for nearly 90 percent of the state total. Table 6 gives, in some detail, information concerning the type of coal mines in each county and the production from each group. Table 7, which is a summary of the 1953 Illinois coal production, indicates that the average value of Illinois coal was $3.95 per ton, according to the United States Bureau of Mines. Therefore, the final value of all coal produced in Illinois in 1953 amounted to about 182 million dollars.

Exports

The United States exported in 1954 a total of 31 million tons of coal. This total was distributed as follows: to Canada, 15.9 million tons; Latin America, 1.5; Europe, 10.5; Asia, 3.0; and other areas, 0.1.

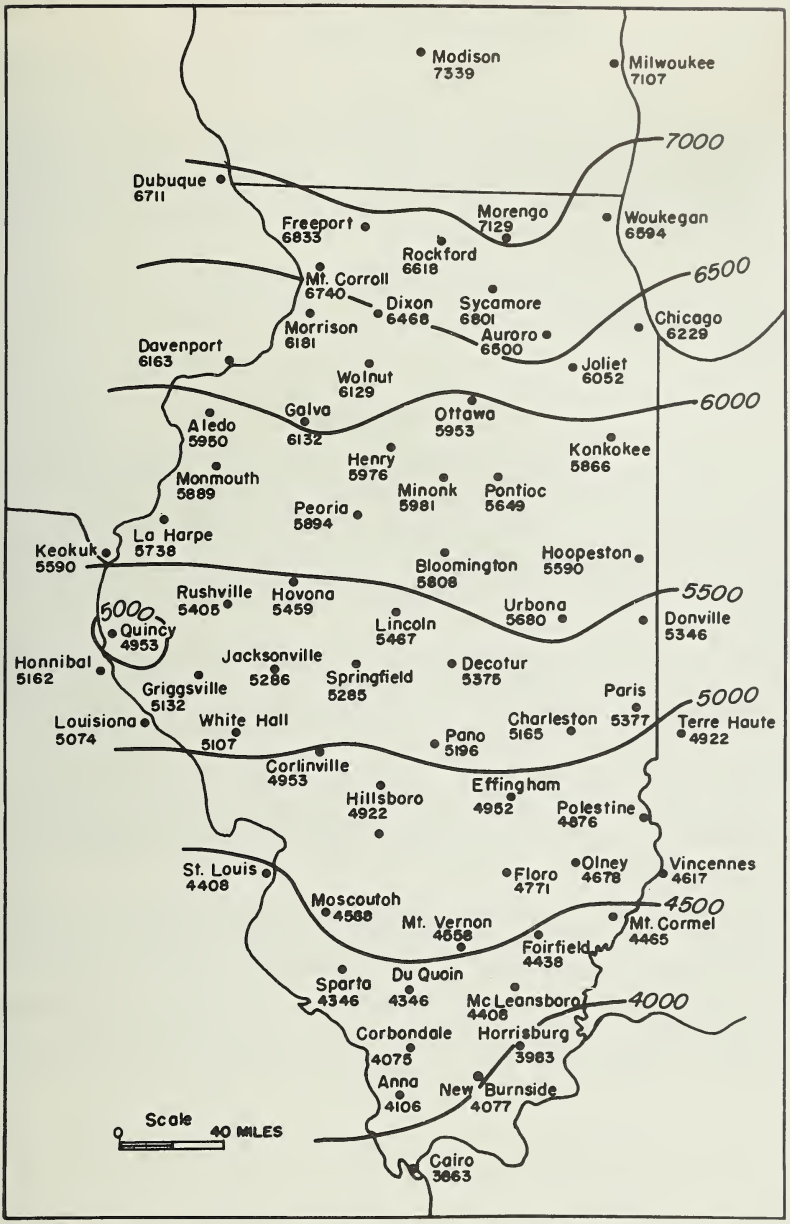

Fig. 7. - Degree-day map of Illinois and adjacent region.

An export market to Europe, a post-World War II development, may become a permanent part of the American coal industry. The inability of the British coal industry to meet domestic requirements and its commitments to neighboring European nations have necessitated the purchase of American coal and may continue to do so. A similar condition exists in West Germany, the other large coal-producing country outside the Russian orbit; it is barely able to meet the coal needs of western Europe. Three million tons of coal have been

shipped to Japan, which formerly imported coal from Manchuria. United States exports of bituminous coal are shown in table 9.

Degree-days

Degree-days are the number of degrees of temperature that the average temperature for each day falls below 65°F. These data totaled for each heating season and averaged over a long period give a reliable guide to the fuel needs of the locality. Because of the close relationship between the number of degree-days accumulated during the heating season and the quantity of fuel consumed, a degree-day map of Illinois showing degree-day figures is useful in estimating domestic fuel consumption (fig. 7).

COKE INDUSTRY

The iron and steel industry of Illinois uses large quantities of coke in the iron blast furnaces to reduce iron ore to a free metal. Coke is produced when coal is heated to a high temperature to drive off moisture and volatile matter. There remains a solid sponge-like residue which, because it has a large surface area, burns readily and produces the high temperature necessary to smelt iron ore.

The cost of fuel is an important item in the production of pig iron, as very large amounts are required to smelt the ore. The coal from which coke is made is found mainly in Pennsylvania, West Virginia, eastern Kentucky, and Alabama.

For Illinois iron makers, this means that the cost of the coal used in making coke is high because of the freight rate from Eastern states. The preparation of coke in the coke oven is costly, which further increases the price of coke at the blast furnace.

All this leads to investigation of ways of making coke from coal that up to the present time has not been considered suitable for coke. Iron and steel mills in the Chicago district spend about $170 million each year to buy 15 million tons of coal to make coke. Most of this coal is now purchased from Appalachian coal-producing districts. The problem of treating Illinois coal to convert it into a coke suitable for use in the blast furnace is being actively investigated.

PETROLEUM INDUSTRY

The value of petroleum produced in Illinois in 1954 exceeded the value of the coal output. Together these two fuel minerals accounted for about 70 percent of the value of the mineral output of the State. In the case of petroleum, this is only part of the story because the refining industry converts crude oil into more valuable products such as gasoline, kerosene, heating oils, and lubricants, thus boosting the value of the original crude oil production.

Economic Implications of Oil

The popularity of the automobile in the United States is probably the most important economic fact in the petroleum industry, for upon it depends the employment and livelihood of millions of workers and their families. Today's automobile could not be operated without the highly specialized and carefully manufactured gasoline fuel from crude petroleum. Automobiles, trucks, and busses use more than one billion barrels of gasoline each year, the equivalent of about one-half of the total crude oil produced in the United States.

The making of motor cars requires about 15 percent of the steel output of the iron industry. Also, a large amount of plate glass, rubber tires, storage batteries, upholstery textiles, paints, and lacquers are needed in manufacturing six million or more cars each year. Construction activities also are stimulated by the use of motor cars. This involves a huge highway-building program entailing cement manufacture, sand, gravel and stone quarrying on a large scale, the preparation of roadbeds, and the assembly of road-building materials. In addition to these activities, the automobile user sets in motion a whole series of service organizations - garages, sales agencies, filling stations, tourist hotels and motels, etc. Altogether, economic activity accounting for 10 to 12 percent of national productivity and employment is based on the automobile.

The introduction of the gasoline-powered tractor has brought about far-reaching changes in agriculture, especially in Illinois and surrounding states.

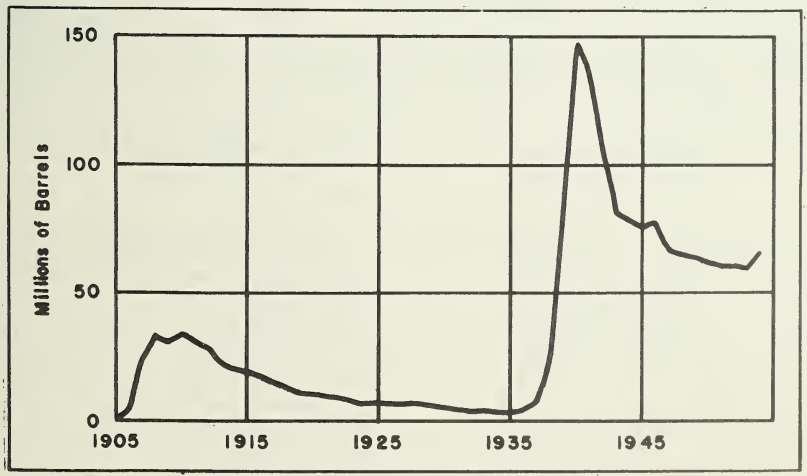

Fig. 8. - Illinois production of crude petroleum, 1905-1954.

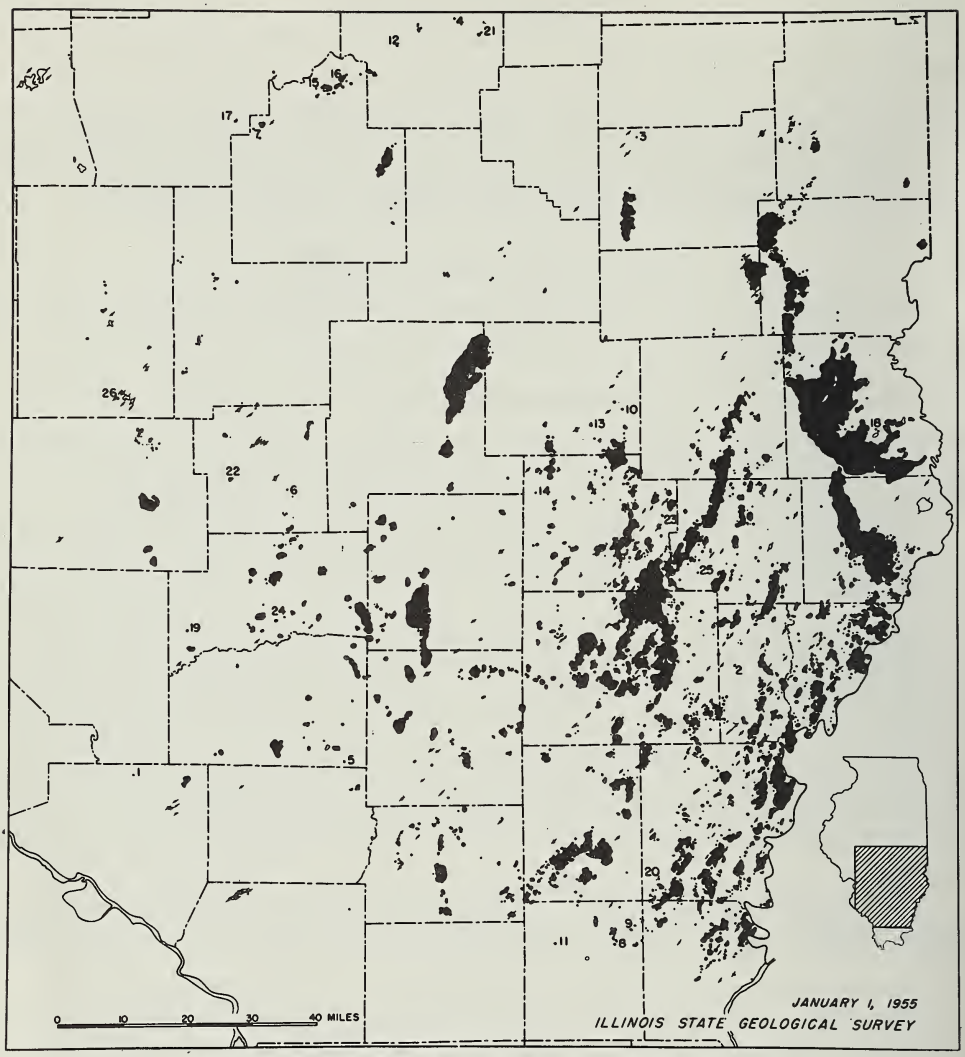

Fig. 9. - New oil pools discovered in Illinois in 1954.

1. Baldwin
2. Bone Gap West
3. Cooks Mills East
4. Decatur North
5. Dubois Central
6. Dudleyville East
7. Edinburg West
8. Eldorado Central
9. Eldorado North
10. Elliottstown East
11. Harco
12. Harristown
13. Hill East
14. Iola Central
15. Mt. Auburn Central
16. Mt. Auburn East
17. New City
18. New Hebron East
19. New Memphis North
20. Norris City
21. Oakley
22. Old Ripley
23. Passport West
24. Posey West
25. Schnell East
26. Staunton West

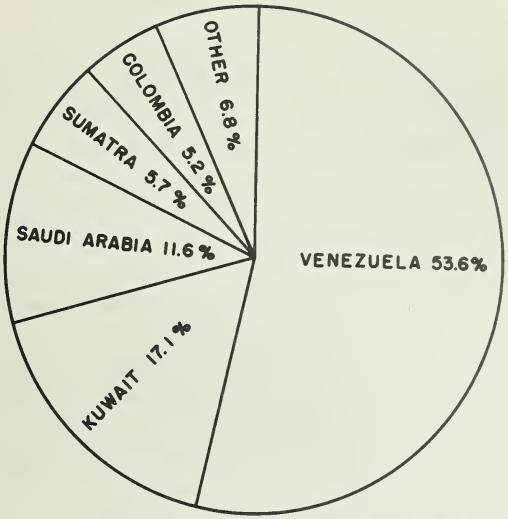

Fig. 10. - Sources of United States crude petroleum imports, 1954.

As a result of the farmer's investment in machinery and equipment, the output of farm labor has been boosted greatly. Since 1940, for example, the total production of corn and other feed grains has increased about one-fifth, the man-hours used to produce them have been reduced by more than one-half, and the output of feed grains per man-hours has increased nearly threefold.

Another result of mechanization of agriculture has been the release of many acres of Midwestern land for food production. For example, the number of tractors on farms increased from 43,000 in 1925 to 235,000 in 1950 while horses on farms declined from 209,000 to 85,000. The land hitherto set aside for feeding horses is now available for food production.

The change in railway locomotive power in the last 15 years has been very marked indeed. During the period between 1940 and 1955 diesel-electric locomotives increased from 850 to more than 25,000 while steam locomotives decreased from 40,000 to less than 10,000. The consumption of fuel for diesel locomotives rose to 3.2 billion gallons of oil while coal railroad fuel, which had reached a high level of 139 million tons in 1944, fell to 17 million tons in 1954.

The Petroleum Industry in 1954

Oil production in the United States in 1954 was about at the level of 1953 but Illinois production in 1954 was nearly 13 percent above that of the previous year. This is the first year production has increased since the peak year of 1940 when 147 million barrels of oil were produced. An important step toward increasing oil production in Illinois was the development of secondary recovery methods. Secondary recovery by means of water flooding began in 1944 and has been increasing each year. In 1954, 23 percent of oil production in the State was credited to secondary recovery.

How Much Oil Do We Have?

Oil is unlike coal or some of the metal ores in that the known reserve is only a few years ahead of annual requirements. Continual exploration for oil and discovery of new fields is an established part of the oil industry. It is the practice of the industry each year to make a survey of the amount of oil reserve that has been proved and can be produced under present conditions of price and production practices. Each year, therefore, a table is prepared showing the oil reserves in each state. This figure must not be misunderstood. It does not mean that all the oil in a state or in the nation has been discovered. It merely means that the figure given is the known amount of oil on a given date. It is something like a bank balance which gives only the bank deposit on a given date to which amounts are added or withdrawn from day to day. The known reserves of crude oil in Illinois and other states for the year ending December 31, 1954, are given in table 15.

Natural Gas Reserves

Estimated natural gas reserves in Illinois are somewhat higher in 1954 than they were in 1953. However, natural gas in Illinois is a minor source of fuel supply. This is shown by comparing estimated reserves in Illinois with those of Kansas, Texas, and Louisiana, the principal suppliers of natural gas consumed in Illinois (table 16). The statistical position of natural gas in Illinois, as reported by the American Gas Association, is given in table 17.

Illinois Oil Production and Developments

The production of crude petroleum in Illinois and other states for 1954 and earlier is given in table 12. Illinois is eighth among oil-producing states.

A history of oil production and drilling activity since the new fields were discovered is given in table 13. Illinois fields producing more than one million barrels of oil during 1954 are given in table 14. Figure 9 shows the new fields discovered in 1954. Illinois production is graphically illustrated in figure 8. The sharp production rise reflects the opening of the Illinois Basin in 1936. Crude oil prices for Illinois and adjacent portions of Indiana and Kentucky are shown in table 19.

Although there were no major oil pool developments in 1954, there was a 13 percent increase in output of oil over the 1953 production. Fracture treatment of wells has been an important factor in the increased production. About 70 percent of all successful wells drilled in Illinois in 1954 were fracture-treated. This method of oil-well treatment has also been used extensively on worked-over wells, some of which were previously reported as dry holes. Of the increase of 7.9 million barrels of oil produced in 1954, it is estimated that 3 million barrels is increased recovery by water flooding.

Crude Oil Imports

A review of the United States crude-oil imports for the years 1950 to 1954 is given in table 20. As indicated in this table, Venezuela is the foremost supplier of our imported crude oil. Imports are also coming from Colombia, Mexico, Iraq, the Persian Gulf, and Sumatra.

INDUSTRIAL MINERALS INDUSTRY

Industrial Minerals in Illinois

Limestone and dolomite are the most important stone products in Illinois. These materials are useful in construction, highway building, railway roadbeds, agriculture, metallurgy, the chemical industry, lime manufacture, and for several minor uses.

The use of limestone and dolomite for correcting soil acidity on Illinois farms and improving soil tilth is a long-established practice and one that extends over most of the farming areas of the State. The total amount used has been near 5 million tons in some years and in recent years has been about 3 million tons.

In general, limestone producers in Illinois have been well placed geographically to supply this demand. In the northern tier of Illinois counties, particularly in the Driftless Area, there are a large number of stone outcrops, which are being quarried by many small stone producers to supply local markets.

In northeastern Illinois, which includes the Chicago district and environs to the south and west, there are a number of large producing companies that ship stone by rail and truck to local markets as well as to more-distant points in Illinois. In the area around and immediately below East St. Louis, there are a number of large commercial stone producers with markets for stone in the fertile farming area outside the St. Louis industrial district as well as eastward in south-central Illinois.

In western Illinois, in the counties that border the Mississippi River, limestone and dolomite are produced in ample quantities for local needs.

Counties usually producing one million tons of limestone and dolomite annually for all purposes are: Cook, Kankakee, Randolph, St. Clair, and Will.

Problems of the Agstone Industry

The use of agricultural limestone on farms has declined from the high peak reached in 1947. Among the reasons given for this decline are decline in farm income, prolonged drouth, and saturation of limestone needs. Farm income in the period from 1947 to 1954, on a national basis, follows:

Year	Income (billions of dollars)
1947	14.5
1948	16.7
1949	12.7
1950	13.3
1951	16.0
1952	14.2
1953	12.2
1954	11.9

Although farm income in 1954 was only 75 percent of the 1951 income, it does not necessarily follow that decrease in agstone use is directly related

to the decline in farm income. One should also consider the alternative use of the farmer's dollar for other types of soil fertilizers. The application of limestone to soils, especially in Illinois, is a well-established practice. The use of fertilizers carrying nitrogen, phosphorous, potash, or all three of these plant foods is of relatively recent origin but is spreading rapidly. This raises problems in maintaining soil productivity. If properly handled and intelligently applied, the use of fertilizers increases crop yields. It also increases the draft upon the plant foods of the soil, including calcium and magnesium. Moreover, the use of such nitrogen-carrying materials as anhydrous ammonia, ammonium nitrate, and ammonium sulfate increase soil acidity. Under certain conditions, plant food materials enter into virtually insoluble combinations with iron and aluminum and are thereby unavailable for plant food. This can be avoided by keeping the soil nonacid. Soil management for high productivity and conservation of fertility requires, therefore, an increase in limestone application along with the increase in phosphorous, nitrogen, or potash.

The program of supplying limestone to farms is supported, in part, by the Federal government. This, in effect, establishes the policy that the public has an interest in soil conservation. Although agricultural limestone consumption in Illinois has been decreasing since 1947, it is not because the soil is adequately limed. Informed opinion among agronomists is that only about one-half of Illinois farms have enough lime. Some of this unlimed land is in permanent pasture upon which farmers generally do not apply limestone. Large areas of available land, however, remain inadequately limed, and there is a need of demonstrating unequivocally that investment in limestone is more than returned in larger production.

FLUORSPAR INDUSTRY

The fluorspar deposits of greatest commercial importance in the United States are situated along the Ohio River in southern Illinois and western Kentucky, and in an area extending from northeastern Colorado to southwestern New Mexico. Those in the Illinois-Kentucky district have been among the largest in the world and have been in production continuously since 1880.

A large number of the fluorspar-producing operations in the Illinois-Kentucky area have been owned and operated by small companies or individuals with limited capital, but most of the large producers also have operations in the district. Over the years the surface deposits generally have become exhausted, and at the present time most mining in that area requires shaft sinking and underground mining. Furthermore, whereas formerly much of the mine output was marketed with a minimum of processing, virtually all fluorspar ore mined now in the Illinois-Kentucky district requires mechanical milling. These factors have tended to increase the cost of producing fluorspar in the district.

Reversing the trend of recent years, the fluorspar industry sustained a major setback in 1954, with domestic output at the lowest level since 1949. Prices dropped sharply after the spring of 1954. Depressed market conditions resulted in curtailment of operations of several domestic mines, and others were shut down completely.

Metallurgical-grade fluorspar producers were the hardest hit segment of the industry. Consumption by the steel industry was 196,000 tons compared to 288,000 tons in 1953. Withdrawal of fluorspar from stocks by steel companies also brought about a reduction in purchases.

Consumption of acid-grade fluorspar in 1954 was at about the same level as in 1953 - 225 million tons. For the first time fluorspar for the manufacture of hydrofluoric acid exceeded the amount used by the steel industry. This was brought about primarily by the increased requirements of the aluminum industry for synthetic cryolite, aluminum fluoride, and other fluorine chemicals.

Domestic output of ceramic-grade fluorspar, used principally in the glass and enamel industries, declined. Also, new competition from Mexican and European suppliers in this market intensified the competitive situation.

Tariffs. - Producers, concerned over the greatly increased volume of imports in the past few years, pressed action for a revision of the fluorspar tariffs during 1954. The Tariff Commission initiated a study of production, trade, imports, and consumption of fluorspar in the United States and the effect of the present tariff status on the domestic industry.

In August 1954, the General Services Administration announced that it had been authorized by the Office of Defense Mobilization to buy metallurgical-grade fluorspar for the national stockpile; no purchases had been made by the end of the year.

The Internal Revenue Code of 1954 increased the depletion allowance applicable to domestic fluorspar from 15 percent to 23 percent.

Present investigations. - Study of the stratigraphy, structure, and areal geology of the fluorspar district in Hardin and Pope counties by the Illinois Geological Survey, with stratigraphic service to the major mining companies,

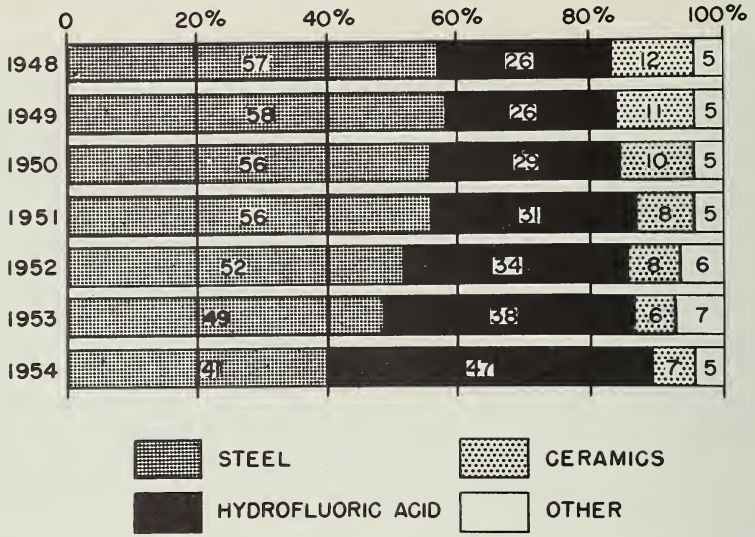

Fig. 11. - Percentage consumption of fluorspar by industries, 1948-1954.

small operators, and prospectors was continued during 1954. Geologists of the major companies ask for identification of formations in unfamiliar territory, and the small operators depend largely on this service as a basis for directing exploratory drilling. The major problem, finding mineralized faults, is dependent largely on recognition of stratigraphic key beds in cores and outcrops.

The ore body discovered near Sparks Hill, in a hitherto unprospected area, received considerable attention from the Survey. The operations are in a new area of fluorspar mining, and drilling has indicated ore at intervals along the northeast-trending fault zone for a distance of 4,000 feet. It appears that a major vein has been discovered in a hitherto unproductive portion of the county.

Illinois Production

During 1953, Illinois maintained its rank as the foremost producer of fluorspar in the United States by supplying about 51 percent of the nation's total domestic shipments (table 25). The next largest producer of fluorspar among the states during 1953 was Colorado, with an output of about 17 percent of the nation's total.

The average price of Illinois fluorspar shipped from mines has shown a steady increase since the year 1948 when the price was $36.64 per ton. The average price for Illinois fluorspar in 1953 was $52.46 per ton, compared to the national average of $49.48 per ton.

The fluorspar industry in the Illinois-Kentucky district has in the past provided employment in mine and mill for about 1,500 men. The severe decline in fluorspar demand beginning in 1953 and continuing in 1954 brought about a decline of employees in the district to 728 in December 1954 and an average of 833 employees for the year.

Imports

During 1954, United States imports of fluorspar for domestic consumption were 294,742 tons, exceeding domestic output by 19 percent. Table 27 shows that nearly half of the imported material came from Mexico. Other countries furnishing imports of sizable quantities included Italy, Spain, Germany, and Canada.

Table 1. - Summary of Illinoi

Line No.	Material	Detail table	Unit	1952*,c Quantity	Value at plants Total	Av.
1	Coal - bituminous	6	tons	45,752,600	$187,585,600	$4.1(
	Petroleum					
2	Crude oil	13	bbls.	60,071,000	166,397,000	2.77
3	Natural gas - marketed	-	M cu. ft.	10,183,000	1,650,000	0.16
4	Natural gas - used in fields	-	M cu. ft.	12,081,000	1,447,000	0.12
5	Natural gasoline	-	bbls.	2,790,000	7,015,000	2.51
6	Liquefied petroleum gases					
7				-	176,509,000	-
	Stone, rock products					
8	Limestone and dolomite	21	tons	22,606,000	28,835,300	1.27
9	Cement	-	bbls.	9,042,260	21,663,400	2.4(
10	Lime	-	tons	460,775	5,917,000	12.84
11				-	56,415,700	-
12	Clay products	22	-	-	43,351,400	-
	Sand and gravel					
13	Sand	23	tons	6,822,660	4,924,600	0.72
14	Gravel	23	tons	8,758,635	6,253,800	0.71
15	Special sands	24	-	-	8,675,600	-
16				-	19,854,000	-
17	Fluorspar	26	tons	188,300	9,481,200	50.35
	Metals					
18	Zinc	-	tons	18,816	6,246,900	332.00
19	Lead	-	tons	4,262	1,372,400	322.00
20	Silver	-	fine oz.	3,781	3,400	0.90
21				-	7,622,700	-
22	Annual mineral production				$500,819,600	

* Revised figures.
a Compiled from various sources; see footnotes in detail tables.
b Preliminary or estimated figures.
c Subject to revision.

ineral Production, 1952-1954[a]

1953*,c			1954[b,c]			Line No.
Quantity	Value at plants Total	Av.	Quantity	Value at plants Total	Av.	
5,966,100	$181,566,200	$3.95	41,775,800	$162,925,400	$3.90	1
9,025,000	171,586,000	2.91	66,940,000	200,820,000	3.00	2
9,282,000	1,559,400	0.168	8,700,000	1,505,000	0.173	3
3,633,000	1,738,000	0.127	13,900,000	1,807,000	0.130	4
3,961,000	9,293,000	2.35	4,400,000	10,560,000	2.40	5 6
-	184,176,400	-	-	214,692,000	-	7
2,000,000	27,300,000	1.24	16,000,000	19,802,000	1.24	8
9,100,000	23,114,000	2.54	9,200,000	23,460,000	2.55	9
520,000	6,987,000	13.44	532,050	7,420,800	13.95	10
-	57,401,000	-	-	50,682,800	-	11
-	46,160,400	-	-	47,202,600	-	12
,882,850	5,108,500	0.74	6,316,700	4,739,500	0.75	13
,108,750	6,166,200	0.76	9,958,000	7,707,300	0.77	14
-	8,703,200	-	-	10,008,300	-	15
-	19,977,900	-	-	22,455,100	-	16
163,300	8,567,000	52.46	106,825	5,926,860	55.48	17
14,556	3,173,200	218.00	13,954	3,097,800	222.00	18
3,391	902,000	266.00	2,624	713,700	272.00	19
2,338	2,100	0.905	814	740	0.905	20
-	4,077,300	-	-	3,812,240	-	21
	$501,926,200			$507,697,000		22

Table 2. - Value of Illinois Mineral Production, 1915-1954[a]
(thousands of dollars)

Year	Mineral production	Year	Mineral production
1915	$114,446	1935	96,484
16	146,360	36	117,916
17	234,736	37	133,437
18	271,244	38	130,155
19	213,701	39	215,157
1920	373,926	1940	287,327
21	254,019	41	333,225
22	244,618	42	341,835
23	282,761	43	337,912
24	235,796	44	342,832
1925	231,658	1945	344,267
26	237,242	46	379,673
27	180,394	47	458,734
28	188,099	48	567,624
29	182,791	49	487,808
1930	148,311	1950	539,236
31	108,066	51	542,031*
32	71,693	52	500,820*
33	74,837	53	501,926*
34	89,212	54	507,697[b]

* Revised figures.

[a] Compiled from following sources:
For years 1915-1922 - U.S. Geol. Survey, Mineral Resources of United States.
For years 1923-1931 - U.S. Bureau of Mines, Mineral Resources of United States.
For years 1932-1938 - U.S. Bureau of Mines, Minerals Yearbooks.
For years 1939-1954 - Summary of canvass made by Illinois Geol. Survey and U.S. Bureau of Mines, and from Minerals Yearbooks.

[b] Preliminary figures.

Table 3. - National Production of Bituminous Coal[a]
(thousands of tons)

State	1942	1947	1952	1953*	1954[b]	Percent of 1954 total
Alabama	19,301	19,048	11,383	12,532	9,900	2.52
Alaska	261	361	686	861	660	.17
Arkansas	1,985	1,871	873	775	600	.15
Colorado	8,086	6,358	3,623	3,575	2,900	.74
Illinois	65,071	67,860	45,790	46,010	42,000	10.71
Indiana	25,388	25,449	16,350	15,812	13,010	3.32
Iowa	2,948	1,684	1,381	1,388	1,315	.34
Kansas	4,230	2,745	2,029	1,715	1,480	.38
Kentucky	62,231	84,241	66,114	65,060	60,045	15.32
Maryland	2,001	2,051	588	531	375	.10
Missouri	3,520	4,236	2,955	2,393	2,230	.57
Montana	3,829	3,178	2,070	1,873	1,520	.39
New Mexico	1,669	1,443	760	514	200	.05
North Dakota	2,537	2,760	2,984	2,803	2,780	.71
Ohio	32,764	37,548	36,209	34,737	30,150	7.69
Oklahoma	2,387	3,421	2,193	2,168	1,800	.46
Pennsylvania	144,073	147,079	89,181	93,331	71,550	18.25
Tennessee	8,158	6,258	5,265	5,467	6,700	1.71
Utah	5,517	7,429	6,140	6,544	5,560	1.42
Virginia	20,136	20,171	21,579	19,119	17,800	4.54
Washington	1,953	1,118	844	690	640	.16
West Virginia	155,882	176,157	141,713	134,105	116,000	29.59
Wyoming	8,133	8,051	6,088	5,245	2,735	.70
Other states	633	107	43	42	50	.01
Total	582,693	630,624	466,841	457,290	392,000	100.00

* Revised figures.
a Source: U.S. Bureau of Mines.
b Preliminary figures.

Table 4. - Production of Bituminous Coal in the Eastern Interior Coal Field[a]
(thousands of tons)

Year	Illinois		Indiana		Western Kentucky		Total tonnage
	Amount	Percent[b]	Amount	Percent[b]	Amount	Percent[b]	
1942	65,071	62.6	25,388	24.4	13,431	13.0	103,890
1947	67,860	58.8	25,449	22.0	22,182	19.2	115,491
1952	45,790	55.0	16,350	19.6	21,182	25.4	83,322
1953*	46,010	55.4	15,812	19.0	21,313	25.6	83,135
1954[c]	42,000	54.2	13,010	17.0	22,450	28.8	77,460

* Revised figures.
a Source: U.S. Bureau of Mines.
b Percentage of total in Eastern Interior coal field.
c Preliminary figures.

Table 5. - Illinois Coal Pro-

County	Total production (in tons)	Total years of production	Last year of production
Adams	46,186	15	1942
Bond	7,355,569	57	1942
Brown	57,324	34	1950
Bureau	48,973,061	70	1954
Calhoun	96,247	27	1912
Cass	212,477	53	1941
Christian	210,762,255	70	1954
Clark	3,252	1	1954
Clinton	38,253,539	73	1954
Coles	198,932	6	1888
Crawford	44,786	13	1942
Douglas	1,147,028	9	1954
Edgar	915,698	41	1952
Effingham	796	1	1890
Franklin	467,432,754	56	1954
Fulton	174,185,859	73	1954
Gallatin	4,690,770	70	1954
Greene	627,244	71	1954
Grundy	40,191,183	73	1954
Hamilton	22,097	16	1905
Hancock	639,687	68	1954
Hardin	40	1	1890
Henry	21,890,447	73	1954
Jackson	82,020,800	73	1954
Jasper	23,739	11	1939
Jefferson	11,662,203	51	1954
Jersey	120,350	59	1951
Johnson	242,109	51	1939
Kankakee	5,709,246	35	1954
Knox	27,403,771	73	1954
LaSalle	65,516,943	73	1954
Livingston	10,099,627	73	1954
Logan	14,234,242	70	1954
Macon	11,000,468	65	1947
Macoupin	260,965,465	73	1954
McDonough	2,634,903	69	1951
McLean	5,544,139	47	1928
Madison	157,372,746	73	1954
Marion	38,949,313	73	1954
Marshall	12,516,141	70	1951

[a] Source: Illinois State Department of Mines and Minerals.

duction by Counties, 1882-1954[a]

County	Total production (in tons)	Total years of production	Last year of production
Menard	13,339,460	73	1954
Mercer	14,998,922	69	1952
Monroe	8,284	13	1941
Montgomery	82,934,986	73	1954
Morgan	190,787	64	1951
Moultrie	2,032,236	16	1924
Peoria	65,736,889	73	1954
Perry	160,627,621	73	1954
Pike	5,081	8	1942
Pope	1,562	11	1938
Putnam	10,071,893	29	1938
Randolph	67,729,690	73	1954
Richland	154	1	1890
Rock Island	3,846,169	67	1948
St. Clair	222,938,976	73	1954
Saline	187,700,872	73	1954
Sangamon	232,467,714	73	1954
Schuyler	2,953,581	72	1954
Scott	612,476	61	1942
Shelby	4,119,763	67	1950
Stark	1,227,280	69	1952
Tazewell	17,628,525	73	1954
Vermilion	149,948,757	73	1954
Wabash	186,144	29	1943
Warren	685,466	73	1954
Washington	17,753,942	73	1954
White	1,676,741	36	1940
Will	36,680,206	73	1954
Williamson	299,446,019	73	1954
Woodford	7,810,160	70	1951
Total (1882-1954)	3,329,123,792		
Estimated production (1833-1881)	73,386,123		
Total production (1833-1954)	3,402,509,915		

Table 6. - Production and Value of Coal

County	Total value[b] all coal	Shipping mines			
		Number of mines	Tons mined underground	Tons mined strip	Total tons mined
Bureau	$2,725,960	1	-	698,964	698,964
Christian	21,075,932	3	5,404,085	-	5,404,085
Clark	12,683	-	-	-	-
Clinton	469,014	1	55,857	-	55,857
Douglas	976,482	1	250,380	-	250,380
Franklin	16,854,922	6	4,321,775	-	4,321,775
Fulton	19,335,868	8	28,907	4,819,256	4,848,163
Gallatin	374,287	-	-	-	-
Greene	11,700	-	-	-	-
Grundy	54,448	-	-	-	-
Hancock	91,728	-	-	-	-
Henry	113,931	1	23,821	-	23,821
Jackson	4,286,377	4	485,831	604,927	1,090,758
Jefferson	6,159,254	1	1,579,296	-	1,579,296
Kankakee	3,256,129	1	-	834,905	834,905
Knox	7,062,760	4	3,304	1,778,828	1,782,132
LaSalle	55,080	-	-	-	-
Livingston	16,240	-	-	-	-
Logan	127,128	-	-	-	-
Macoupin	1,962,254	3	503,142	-	503,142
Madison	3,881,132	3	989,125	-	989,125
Marion	270,590	1	69,382	-	69,382
Menard	53,574	-	-	-	-
Montgomery	6,242,792	1	1,600,716	-	1,600,716
Peoria	1,657,531	-	-	-	-
Perry	12,828,250	8	1,416,011	1,869,974	3,285,985
Randolph	6,383,637	4	837,711	793,129	1,630,840
St. Clair	11,091,850	7	1,488,763	797,926	2,286,689
Saline	8,465,407	7	1,563,702	576,612	2,140,314
Sangamon	414,402	-	-	-	-
Schuyler	88,257	-	-	-	-
Tazewell	36,387	-	-	-	-
Vermilion	3,171,811	2	42,849	720,373	763,222
Warren	3,420	-	-	-	-
Washington	73,929	1	10,537	-	10,537
Will	527,206	1	-	135,181	135,181
Williamson	22,713,081	18	3,954,530	1,758,003	5,712,533
Total	$162,925,433	87	24,629,724	15,388,078	40,017,802

[a] Source: Illinois State Department of Mines and Minerals.
[b] Average value for Illinois coal, f.o.b. mine, estimated at $3.90 per ton, 1954

om Illinois Mines, by Counties, 1954[a]

Local mines				County totals		
umber mines	Tons mined underground	Tons mined strip	Total tons mined	Number of mines	Total tons mined	Percent of State total
-	-	-	-	1	698,964	1.67
-	-	-	-	3	5,404,085	12.93
1	-	3,252	3,252	1	3,252	-
1	64,403	-	64,403	2	120,260	0.29
-	-	-	-	1	250,380	0.60
-	-	-	-	6	4,321,775	10.34
18	47,088	62,664	109,752	26	4,957,915	11.86
7	95,971	-	95,971	7	95,971	0.23
1	-	3,000	3,000	1	3,000	-
2	7,106	6,855	13,961	2	13,961	0.03
1	-	23,520	23,520	1	23,520	0.06
1	5,392	-	5,392	2	29,213	0.07
3	1,212	7,101	8,313	7	1,099,071	2.63
-	-	-	-	1	1,579,296	3.78
-	-	-	-	1	834,905	2.00
1	28,832	-	28,832	5	1,810,964	4.33
7	10,178	3,945	14,123	7	14,123	0.03
2	-	4,164	4,164	2	4,164	0.01
1	32,597	-	32,597	1	32,597	0.08
-	-	-	-	3	503,142	1.20
1	6,037	-	6,037	4	995,162	2.38
-	-	-	-	1	69,382	0.17
5	13,737	-	13,737	5	13,737	0.03
-	-	-	-	1	1,600,716	3.83
16	53,267	371,741	425,008	16	425,008	1.02
3	3,310	-	3,310	11	3,289,295	7.87
2	5,990	-	5,990	6	1,636,830	3.91
9	63,494	493,881	557,375	16	2,844,064	6.80
5	7,360	22,943	30,303	12	2,170,617	5.20
4	106,257	-	106,257	4	106,257	0.26
4	15,876	6,754	22,630	4	22,630	0.05
1	9,330	-	9,330	1	9,330	0.02
9	23,079	26,984	50,063	11	813,285	1.95
1	877	-	877	1	877	-
1	8,419	-	8,419	2	18,956	0.05
-	-	-	-	1	135,181	0.32
2	110,684	650	111,334	30	5,823,867	14.00
9	720,496	1,037,454	1,757,950	206	41,775,752	100.00

Table 7. - Summary of Amount and Value of Coal Produced in Illinois, 1953[a]

Type of mine	1953 35 producing counties			
	Number of mines	Net tons produced	Percent of total tons	Av. value[b] $3.95* per ton
Strip mines				
Shipping	29	15,495,734	33.7	$61,208,100
Local	44	1,184,602	2.6	4,679,200
Total	73	16,680,336	36.3	65,887,300
Underground mines				
Shipping	68	28,351,587	61.7	111,988,800
Local	91	934,191	2.0	3,690,100
Total	159	29,285,778	63.7	115,678,900
Grand total	232	45,966,114	100.0	$181,566,200

* Revised figure.
a Source: Illinois Department of Mines and Minerals.
b U.S. Bureau of Mines average value for Illinois coal f.o.b. mine.

Table 8. - National Consumption of Bituminous Coal[a]

Consumer	Amount used (thousands of tons)			1954 percent change from 1947
	1947	1953*	1954[b]	
Electric power utilities	86,009	112,283	115,235	+34.0
Coke ovens	94,325	104,648	84,394	-10.5
Beehive coke ovens	10,475	8,226	894	-91.5
Steel and rolling mills	10,048	6,207	4,944	-51.0
Cement mills	7,938	8,362	8,153	+ 2.7
Other industrial	126,948	97,437	78,953	-37.8
Railroads (Class I)	109,296	27,735	17,370	-84.1
Bunker fuel	1,689	605	427	-74.7
Retail deliveries	99,163	61,295	52,616	-46.9
Total	545,891	426,798	362,986	-33.5

* Revised figures.
a Source: U.S. Bureau of Mines.
b Preliminary figures.

Table 9. - United States Exports of Bituminous Coal[a]
(thousands of tons)

Year	Amount	Year	Amount
1945	27,956.2	1950	25,468.4
1946*	41,197.4	1951*	56,721.5
1947	68,667.0	1952	47,643.2
1948	45,930.1	1953*	33,760.3
1949	27,842.1	1954[b]	31,027.9

* Revised figures.
a Source: U.S. Bureau of Mines.
b Preliminary figure.

Table 10. - Coke and By-Products Used or Sold by Producers in Illinois[a]

	1954		
	Quantity	Value at plants	
		Thousands of dollars	Average
Coke produced (M tons)	2,248	$38,970	$17.33
Coal used (M tons)	3,209	32,187	10.03
Coal per ton of coke (tons)	1.43	-	14.32
Yield of coke (percent of coal used)	70.05	-	-
Coke breeze recovered (M tons)	171	737	4.31
Number of plants, end of year	8	-	-
Number of ovens, end of year	711	-	-
Capacity (M tons)	3,071	-	-
Coke used by producers in blast furnaces (M tons)	1,890	32,313	17.10
Other coke and breeze used by producers (M tons)	180	1,689	-
Coke and breeze sold by producers (M tons)	395	6,276	-
Total coke and breeze used or sold	2,465	40,278	-
By-products used or sold	-	9,970	-
Total coke and by-products used or sold		50,248	

a Source: U.S. Bureau of Mines.

Table 11. - Sources of Coal Used for Producing Coke in Illinois[a]
(tons)

Source	1953	1954
Illinois	405,344	266,372
Kentucky	2,112,243	1,394,558
Pennsylvania	20,118	13,124
Virginia	156,100	120,719
West Virginia	2,353,495	1,227,080
Total	5,047,300	3,021,853

a Source: U.S. Bureau of Mines.

Table 12. - Production of Crude Petroleum by States[a]
(thousands of barrels)

State	1942	1947	1952	1953*	1954[b]	Percent of 1954 total
Alabama	-	396	1,279	1,694	1,584	-
Arkansas	26,628	29,948	29,440	29,681	29,206	1.3
California	248,326	333,132	359,450	365,085	355,779	15.4
Colorado	2,199	15,702	30,381	36,402	41,052	1.8
Florida	-	259	591	543	548	-
Illinois	106,391	66,459	60,089	59,026	66,998	2.9
Indiana	6,743	6,095	12,037	12,823	11,204	0.5
Kansas	97,636	105,132	114,807	114,566	119,317	5.1
Kentucky	4,534	9,397	11,918	11,518	13,791	0.6
Louisiana	115,785	160,128	243,929	256,632	246,093	10.6
Michigan	21,754	16,215	13,251	12,285	12,027	0.5
Mississippi	28,833	34,925	36,310	35,620	33,591	1.4
Montana	8,074	8,742	9,606	11,920	13,687	0.6
Nebraska	1,237	229	2,660	6,344	7,423	0.3
New Mexico	31,544	40,926	58,681	70,441	75,200	3.2
New York	5,421	4,762	4,242	3,800	3,257	0.2
North Dakota	-	-	1,549	5,183	5,979	0.3
Ohio	3,543	3,108	3,350	3,610	3,829	0.2
Oklahoma	140,690	141,019	190,435	202,570	186,349	8.1
Pennsylvania	17,779	12,690	11,233	10,649	9,107	0.4
Texas	483,097	820,210	1,022,139	1,019,164	981,722	42.4
Utah	-	-	1,737	1,807	1,873	0.1
West Virginia	3,574	2,617	2,602	3,038	2,902	0.1
Wyoming	32,812	44,772	68,074	82,618	93,633	4.0
Other states	45	124	46	63	172	-
Total	1,386,645	1,856,987	2,289,836	2,357,082	2,316,323	100.0

* Revised figures.
[a] Source: U.S. Bureau of Mines.
[b] Preliminary figures.

Table 13. - Illinois Well Completions and Production[a]

Year	Completions[b]	Producing wells[f]	Production (thousands of barrels) New fields[c]	Old fields[c,d]	Total[e]
1936	93	52	-	-	4,445
1937	449	292	2,884	4,542	7,426
1938	2,536	2,010	19,771	4,304	24,075
1939	3,617	2,970	90,908	4,004	94,912
1940	3,755	3,080	142,969	4,678	147,647
1941	3,807	2,925	128,993	5,145	134,138
1942	2,017	1,179	101,837	4,753	106,590
1943	1,791	1,090 (20)	77,581	4,675	82,256
1944	1,991	1,229 (12)	72,946	4,467	77,413
1945	1,763	1,094 (15)	70,839	4,371	75,210
1946	2,362	1,387 (17)	70,174	5,123	75,297
1947	2,046	1,102 (22)	61,455	5,004	66,459
1948	2,489	1,316 (21)	59,623	5,185	64,808
1949	2,741	1,447 (32)	58,571	5,930	64,501
1950	2,894	1,328 (23)	55,794	6,234	62,028
1951	2,383	947 (23)	54,147	6,097	60,244
1952	2,077	854 (35)	53,727	6,344	60,071
1953	2,161	1,161 (88)	51,924	7,101	59,025
1954	3,254	1,896 (107)	59,130	7,810	66,940

[a] Source: Illinois Geol. Survey.
[b] Includes only oil and gas producers and dry holes.
[c] Production figures based on information furnished by oil companies and pipeline companies.
[d] Includes Devonian production at Sandoval and Bartelso.
[e] From the U.S. Bureau of Mines through 1950.
[f] Figures in parenthesis refer to the number of producing wells included in total that had previously been completed as dry holes.

Table 14. - Illinois Fields Producing More Than One Million Barrels of Oil During 1954

Rank	Field	Production (thousands of bbls.)	Percent of State total
1	Clay City Consol.	10,614	15.8
2	Southeastern field	7,413	11.1
3	Louden	6,314	9.4
4	Salem Consol.	5,466	8.2
5	New Harmony Consol.	4,762	7.1
6	Roland Consol.	2,073	3.1
7	Dale Consol.	1,854	2.8
8	Benton	1,755	2.6
9	Sailor Springs Consol.	1,538	2.3
10	Albion Consol.	1,100	1.6
	Total	42,889	64.0
	Other fields	24,051	36.0
	State total	66,940	100.0

Table 15. - Estimates of Proved Oil Reserves in States Serving the Illinois Area[a] (millions of barrels)

State	1951	1952	1953	1954	1955	Percent change from 1954
Illinois	564	646	619	625	658	+ 5.3
Indiana	57	51	56	62	67	+ 8.1
Kansas	732	792	917	913	978	+ 7.1
Louisiana	2,185	2,285	2,558	2,760	2,962	+ 7.3
New Mexico	592	612	733	815	806	- 1.0
Oklahoma	1,397	1,476	1,558	1,752	1,955	+ 11.6
Texas	13,582	15,315	14,916	14,999	14,982	- 0.1
Wyoming	841	973	1,065	1,279	1,304	+ 2.0

[a] Source: American Petroleum Institute; figures as of January 1, 1955.

Table 16. - Estimates of Natural Gas Reserves in Illinois and Other States[a] (billions of cubic feet)

State	1952	1953	1954	1955	Percent change from 1954
Illinois	227	212	231	254	+ 9.1
Indiana	31	37	36	36	-
Kansas	13,457	14,194	15,788	15,758	- 0.2
Kentucky	1,326	1,314	1,302	1,287	- 1.1
Louisiana	29,005	31,452	34,459	36,800	+ 6.8
New Mexico	11,590	14,039	17,522	17,241	- 1.6
Oklahoma	11,804	11,765	12,228	12,396	+ 1.4
Texas	105,653	105,733	106,530	105,129	- 1.3
Wyoming	2,340	2,321	2,740	2,855	+ 4.2

[a] Source: American Gas Association; figures as of January 1, 1955.

Table 17. - Natural Gas Reserves in Illinois[a]
(millions of cubic feet - 14.65 psia at 60° F.)

Reserves as of December 31, 1953	231,251
Extensions and revisions	33,206
Discoveries of new fields or pools	4,048
Net change in underground storage	19,802
Net production	34,551
Total reserves, December 31, 1954	253,756
Underground storage	19,802

[a] Source: American Gas Association annual report for 1954.

Table 18. - Gasoline Consumption in Illinois and the United States[a]
(thousands of barrels)

	1950	1951	1952	1953	1954[b]
Illinois total	54,276	56,564	58,219	60,595	62,731
United States total	967,078	1,046,074	1,105,432	1,175,572*	1,216,674
Percentage of U.S. total consumed in Illinois	5.6	5.4	5.3	5.1	5.1

* Revised figure.
a Source: American Petroleum Institute.
b Preliminary figures.

Table 19. - Crude Oil Prices at the Well[a]

Area	In dollars per barrel
Illinois	
Eastern Illinois (Ohio Oil, 10-23-54)	Schedule P
Illinois Basin (Ashland, 7-9-54; Gulf, 10-16-54)	2.90
Illinois Basin (Magnolia, 11-20-54; Ohio Oil, 10-23-54; Pure, 10-28-54; Texaco, 11-19-54)	2.95
Illinois Basin (Cities Service, Shell)	3.02
Illinois (Sohio, 10-1-54, except fields below)	2.90
Illinois (Sohio, 10-1-54) Dudley field	2.59
Illinois (Sohio, 10-1-54) Elbridge and Stoy fields	Schedule O
Loudon and Mattoon pools (Carter, 11-1-54)	2.95
Plymouth (Ohio Oil, 10-23-54)	2.62
Indiana	
All fields and pools (Sohio, 10-1-54)	2.90
Western Indiana (Ohio Oil, 10-23-54)	Schedule P
Kentucky	
Butler County area (Owensboro-Ashland, 7-12-54)	2.90
Owensboro area (Ashland, 7-9-54)	2.90
Ragland Grade (Ashland, 7-9-54)	2.37
Somerset Grade (Ashland, 7-9-54)	2.77
Western Kentucky, all fields and pools, Sohio (19-1-54)	2.90

[a] Source: National Petroleum News, December 1954.

Table 20. - United States Crude Oil Imports[a]
(thousands of barrels)

From	1950	1951	1952	1953*	1954[b]	Percentage of 1954 total
Canada	-	463	1,116	2,527	2,565	1.1
Colombia	16,159	16,312	16,209	15,860	12,415	5.2
Iraq	-	-	705	2,287	2,188	1.0
Kuwait	26,741	21,601	26,444	38,611	41,046	17.1
Mexico	12,307	13,862	8,483	2,897	3,018	1.3
Neutral zone	-	-	-	-	2,983	1.2
Peru	-	-	-	-	608	0.2
Qatar	116	-	-	3,368	3,524	1.5
Saudi Arabia	14,650	15,900	29,407	36,668	27,819	11.6
Sumatra	-	-	3,640	13,969	13,705	5.7
Venezuela	107,019	107,437	121,963	120,178	128,377	53.6
Other	722	3,498	1,624	90	1,231	0.5
Total	177,714	179,073	209,591	236,455	239,479	100.0

* Revised figures.
[a] Source: U.S. Bureau of Mines.
[b] Preliminary figures.

Table 21. - Illinois Limestone and Dolomite Production

Use	1953			1954[a]		
	Tons	Value		Tons	Value	
		Total	Av.		Total	Av.
Agricultural	3,725,000	$4,842,500	$1.30	2,960,000	$3,848,000	$1.30
Construction and paving	14,250,000	16,387,500	1.15	10,900,000	13,407,000	1.23
Metallurgical	875,000	1,400,000	1.60	250,000	370,000	1.48
Railroad ballast	1,250,000	1,250,000	1.00	780,000	889,200	1.14
Other	1,900,000	3,420,000	1.80	1,110,000	1,287,600	1.16
Total	22,000,000	$27,300,000	$1.24	16,000,000	$19,801,800	$1.24

[a] Preliminary figures, subject to revision.

Table 22. - Illinois Clay Products

Clay product	1952*	1953*	1954[a]
Face brick	$5,294,170	$6,922,435	$8,153,255
Common brick	7,608,065	6,759,425	7,160,115
Other structural products	6,108,575	4,670,420	4,642,150
Clay and silica refractories	10,902,195	11,960,100	8,744,050
Pottery and whiteware	13,438,385	15,848,020	18,503,060
Total	$43,351,390	$46,160,400	$47,202,630

* Revised figures.
a Preliminary figures, subject to revision.

Table 23. - Special Sands in Illinois

Use	1953 Tons	1953 Value Total	1953 Value Av.	1954[a] Tons	1954[a] Value Total	1954[a] Value Av.
Silica sand						
Molding sand	1,080,000	$2,268,000	2.10	619,100	$1,500,300	$2.42
Other uses[b]	1,342,000	3,502,800	2.61	1,708,700	5,669,100	3.32
Ground silica[c]	-	2,816,500	-	-	2,651,900	-
Total silica sand		8,587,300			9,821,300	
Natural bonded molding sand	55,776	115,914	2.08	84,300	187,000	2.22
Total special sands	-	$8,703,214	-	-	$10,008,300	-

a Preliminary figures.
b Glass, grinding and polishing, blast, fire and furnace, engine, filter.
c For abrasives, ceramics, foundry and filler from ground siliceous material.

Table 24. - Illinois Sand[a] and Gravel Production

Uses	1953 Amount tons	1953 Value Total	1953 Value Av.	1954[b] Amount tons	1954[b] Value Total	1954[b] Value Av.
Building sand	4,488,000	$3,276,240	$0.73	4,069,000	$3,041,000	$0.73
Paving and road sand	1,558,400	1,246,720	0.80	1,771,700	1,359,200	0.82
Other sand	836,450	585,515	0.70	476,000	339,300	0.71
Total sand	6,882,850	5,108,475	0.74	6,316,700	4,739,500	0.75
Building gravel	3,884,975	3,185,680	0.82	3,388,400	3,075,200	0.91
Paving and road gravel	2,926,700	2,165,760	0.74	5,045,200	3,808,700	0.76
Railroad ballast	855,100	478,860	0.56	528,900	341,900	0.65
Other gravel	441,975	335,900	0.76	995,500	481,500	0.50
Total gravel	8,108,750	6,166,200	0.76	9,958,000	7,707,300	0.77
Total sand and gravel	14,991,600	$11,274,675	$0.75	16,274,700	$12,446,800	$0.76

[a] Exclusive of silica sand and natural bonded molding sand.
[b] Preliminary figures, subject to revision.

Table 25. - Fluorspar Shipped from Mines in the United States[a]

State	1952			1953			Percent of 1953 total tons
	Tons	Value		Tons	Value		
		Total	Av.		Total	Av.	
Colorado	29,185	$1,505,968	$51.60	53,276	$2,872,360	$53.91	16.8
Illinois	188,293	9,481,223	50.35	163,303	8,567,026	52.46	51.3
Kentucky	48,308	1,863,262	38.57	47,244	2,100,493	44.46	14.9
Utah	17,304	438,699	25.35	15,527	374,944	24.15	4.9
Other states							
New Mexico	16,443	823,320	50.07	17,822	729,523	40.93	5.6
Montana	16,160						
Nevada	14,798	1,241,162	39.10	18,487	963,832	52.14	5.8
Idaho							
Arizona	434			1,951	128,730	54.16	0.6
Tennessee	348			426			0.1
Total	331,273	15,353,634	46.35	318,036	15,736,908	49.48	100.0

[a] Source: U.S. Bureau of Mines.

Table 26. - Consumption of Fluorspar (Domestic and Foreign) in the United States by Industry[a] (tons)

Year	Steel	Hydro-fluoric acid	Glass	Enamel	All other	Total
1942	242,600	81,600	18,500	3,100	15,000	360,800
1947	209,395	100,363	42,130	8,938	15,312	376,138
1952	272,476	178,267	33,837	5,205	30,412	520,197
1953*	287,607	223,359	32,955	5,863	37,014	586,798
1954[b]	196,128	225,096	29,745	5,737	21,935	478,641
Percent of 1954 total	41.0	47.0	6.2	1.2	4.6	100.0

* Revised figures.
a Source: U.S. Bureau of Mines.
b Preliminary figures.

Table 27. - Fluorspar Imported for Consumption in the United States[a]

Source	1953* Tons	1953* Value	1954 Tons	1954 Percent of total tons
Canada	22,020	$ 706,702	34,756	11.8
France	1,164	31,472	221	-
Germany	36,366[b]	1,589,919	35,684	12.1
Italy	53,868	2,442,700	49,201	16.7
Mexico	190,413	4,977,674	134,650	45.7
Spain	52,286	1,717,609	39,429	13.4
Other	5,102	85,191	801	0.3
Total	361,219	11,551,267	294,742	100.0

* Revised figures.
a Source: U.S. Bureau of Mines.
b Includes Netherlands.

Table 28. - Fluorspar Data for the United States[a]
(tons)

Year	Production	Shipments from mines	General Imports	Consumption	Total industry stocks
1942	337,000	360,316	2,151	360,800	115,429
1947	343,700	329,484	78,379	376,138	147,251
1952	345,400	331,273	359,460*	520,197	279,657
1953*	322,800	318,036	367,096	586,798	258,502
1954	248,983	244,939	318,355	478,641	179,793

* Revised figures.
a Source: U.S. Bureau of Mines.

DIRECTORY OF ILLINOIS INDUSTRIAL MINERALS PRODUCERS

The following pages contain lists of mineral operators (except fluorspar and metals) reporting, as of July 1955, production for the year 1954. These lists are arranged by product and by county. The list is necessarily incomplete as several reports were received too late to be included in the list for publication.

The purpose of publishing this directory is to aid consumers of mineral raw materials to locate the most convenient source of production, to answer queries of mine- and quarry-equipment manufacturers, and to give citizens of the State information about their local industries.

This list will also make the general report more valuable to teachers in the public schools who are in the habit of using these reports for studies in mineral resources and conservation.

LIMESTONE AND DOLOMITE PRODUCERS 1954

Adams

The Black & White Limestone Co., Box 87, Front & 8th St., Quincy
Marblehead Lime Co., 300 W. Washington St., Chicago
Menke Stone & Lime Co., 828 Vermont St., Quincy

Boone

Belvidere Lime Quarry, 129 West Locust St., Belvidere

Brown

Aber and Fry, Mt. Sterling

Calhoun

Paul E. Herter, Golden Eagle

Clark

Casey Stone Co., Box 128, Casey
Ralph E. Montgomery, Box 128, Marshall
Quality Lime Co., Marshall

Coles

Langs Stone Quarry, Box 183, Charleston 2
Olen Humphres Stone Quarry, Ashmore

Cook

Consumers Co. of Illinois, 79 W. Monroe St., Chicago 3
Dolese & Shepard Co., Box 227, La Grange

DuPage

Elmhurst-Chicago Stone Co., 400 West First St., Elmhurst

Effingham

Winters Stone Quarry, Altamont

Companies and individuals reporting (as of July 1955) production for 1954, listed by counties in which operation occurred.

Fulton
Chipman Stone Quarry, R. D. Chipman, Farmington

Greene
Chester Castleberry, 120 Drummond St., White Hall

Hancock
The Gray Quarries, Hamilton
W. F. Hanna, Nauvoo
R. L. O'Neal & Sons, Carthage

Hardin
J. L. Bean Stone Co., Golconda
P. R. Brown Stone Co., Box 355, Golconda
Okerson Quarry Co., Box 226, Cave in Rock
Rigsby & Barnard, Box 56, Cave in Rock

Henderson
Galbraith Stone Quarry, Raritan
Olson Brothers, Box 355, Dallas City

Jackson
Illinois Quarry Co., Box 401, Ava

Jersey
Jersey-Quarry Inc., Fieldon
Sievers Brothers, Fieldon

Jo Daviess
W. E. Broege, Warren
Elmer G. Wienen & Sons, 308 South St., Galena

Johnson
Southern Illinois Stone Co., Box 28, Buncombe
The Charles Stone Co., Cypress

Kane
Fox River Stone Co., Route 2, Elgin

Kankakee
Bourbonnais Stone Quarry, 284 South Clinton, Bradley
Lehigh Stone Co., Box 669, Kankakee
Manteno Limestone Co., Box 301, Manteno

Kendall
Central Limestone Co., R. D. 4, Morris

LaSalle
Alpha Portland Cement Co., 13 South Third St., Easton, Pennsylvania
Sheridan Stone Co., Box 117, Sheridan
Troy Grove Stone Co., Troy Grove
Utica Stone Co., Spring Valley

Companies and individuals reporting (as of July 1955) production for 1954, listed by counties in which operation occurred.

Lee
Frank N. Butler Co., Franklin Grove
Ward McGinnis, Route 1, Dixon
Stoneridge Limestone Co., 5030 13th St., Rochelle
Wilmer Gerdes Quarry, Route 2, Dixon

Livingston
Livingston Stone Co., Inc., Pontiac
Ocoya Stone Co., Pontiac
Pontiac Stone Co., Box 412, Pontiac
Wagner Stone Co., Route 1, Pontiac

Logan
Rocky Ford Limestone Co., Route 1, Lincoln

Madison
C. M. Lohr, Inc., Godfrey
Mississippi Lime Co. of Missouri, 7 A Iby St., Alton
Reliance Whiting Co., Box 265, 16th St. & Alby St., Alton

Menard
Athens Stone Quarry, Route 2, Athens

Mercer
Independent Materials Co., Viola

McDonough
John McClure, Colchester

McHenry
Garden Prairie Stone Co., Inc., 104 South State St., Marengo

Monroe
Columbia Quarry Co., 1007 Washington Ave., St. Louis 1, Missouri

Montgomery
Litchfield Stone Co., Litchfield

Ogle
Kutz Brothers Co., Forreston
Clarence Lenstrom, Stillman Valley
William Seitz, Oregon

Peoria
Lamar Stone Co., Princeville
Trivoli Stone Co., Rural Route, Trivoli

Pike
Harry Lacey, Jr., Pearl
Narvin O. Lumley, Kinderhook
Pearl Stone Co., Pearl

Companies and individuals reporting (as of July 1955) production for 1954, listed by counties in which operation occurred.

Pulaski
Columbia Quarry Co., 1007 Washington Ave., St. Louis 1, Missouri

Randolph
Allied Chemical & Dye Corp., Solvay Process Div., Box 271, Syracuse, New York
Chester Quarry Co., Chester
Al Stotz, Pautler Heights, Waterloo

Rock Island
Collinson Stone Co., 3115 23rd Ave., Moline
Cordova Quarry Inc., 3115 23rd Ave., Moline
Midway Stone Co., Inc., Hillsdale

St. Clair
Casper Stolle Quarry & Const. Co., Route 1, East St. Louis
Columbia Quarry Co., 1007 Washington Ave., St. Louis, Missouri
East St. Louis Stone Co., 528 Murphy Bldg., East St. Louis, Missouri
Hecker Quarry Inc., 301 South Jackson St., New Athens

Scott
Kruger Quarry, Winchester
Thomas Quarry, Winchester

Stephenson
Ray Askey, Orangeville
W. E. Broege, Warren
Ed. Finkbiener & Son, 4 East South St., Freeport
Arthur Zimmerman, Pecatonica

Union
Anna Quarries Inc., Anna
Jonesboro Stone Co., Route 1, Waldo

Whiteside
Fred R. McKenzie & Co., 405 Bondi Bldg., Galesburg
Minor Brothers, 1003 8th Ave., Rock Falls

Will
Lincoln Crushed Stone Co., Box 1224, Joliet
National Stone Co., Box 1213, Joliet

Winnebago
Charles G. Ind Co., 2722 Broadway, Rockford
William Nordhop, 522 Furman St., Rockford
Porter Brothers, Roscoe
Art Zimmerman, Pecatonica

Companies and individuals reporting (as of July 1955) production for 1954, listed by counties in which operation occurred.

CLAY PRODUCTS PRODUCERS 1954

Boone
- Munson Brothers & Co., Capron

Brown
- Frederic Brick & Tile Co., Box 146, Mt. Sterling

Bureau
- Sheffield Shale Products Co., Sheffield

Cook
- Alexander Burke's Sons, 3900 South Cicero Ave., Cicero 50
- Brisch Brick Co., 228 North LaSalle St., Chicago 1
- Carey Brick Co., 6558 Fullerton Ave., Chicago 35
- Chicago Brick Co., 135 South LaSalle St., Chicago
- Chicago Fire Brick Co., 1467 North Elston Ave., Chicago 22
- Chicago Pottery Co., 1920 Clybourn Ave., Chicago 14
- George Keller Pottery Co., 2618 North Lakewood Ave., Chicago
- Northwestern Terra Cotta Corp., 1750 West Wrightwood, Chicago
- Plibrico Co., 1840 Kingsbury St., Chicago
- Tuthill Building Material Co., 545 East 103rd St., Chicago 28
- Wingert Pottery Co., 5035 Foster Ave., Chicago

Crawford
- W. A. Case & Son Manufacturing Co., 33 Main St., Buffalo 3, New York

Edwards
- Albion Brick Co., Albion

Fayette
- St. Elmo Brick and Tile Co., St. Elmo

Greene
- Ruckels Potteries, Inc., White Hall
- White Hall Sewer Pipe and Drain Tile Co., Laclede-Christy Co., Division H. K. Porter Co., Inc., 2000 Hampton Ave., St. Louis, Missouri

Grundy
- The Illinois Clay Products Co., 214 Barber Bldg., Joliet

Jackson
- Jackson County Brick Co., Campbell Hill

Kane
- Haeger Potteries, Inc., Dundee

Kankakee
- St. Anne Brick & Tile Co., St. Anne

Companies and individuals reporting (as of July 1955) production for 1954, listed by counties in which operation occurred.

Knox
Abingdon Potteries, Inc., 801 North Main St., Abingdon
Purington Brick and Tile Co., Box 110, Galesburg

Lake
National Brick Co., 3150 West Touhy Ave., Chicago 45
Pickard, Inc., Corona Ave., Antioch

LaSalle
The Conco-Meier Co., RFD Lowell, Tonica
Laclede-Christy Co., Division of H. K. Porter Co., Inc., 2000 Hampton Ave., St. Louis 10, Missouri
Streator Brick Company Division, Hydraulic-Press Brick Co., 705 Olive St., St. Louis, Missouri
Streator Drain Tile Co., Streator

Livingston
Diller Tile Co., Chatsworth

Logan
Stetson China Co., 999 North Kickapoo St., Lincoln

Madison
Alton Brick Co., Alton
Richards Brick Co., Edwardsville
Western Fire Brick Co., Granite City

Marshall
Hydraulic-Press Brick Co., 809 Lehmann Building, Peoria

Menard
Springfield Clay Products Co., Springfield

Mercer
Hydraulic-Press Brick Co., 901 Putnam Bldg., Davenport, Iowa

McDonough
Illinois McGraw Electric Co., 510 North Pearl St., Macomb
Macomb Pottery Co., Macomb
Western Stoneware Co., 621 West 6th Ave., Monmouth

McHenry
American Terra Cotta Corp., Box 225, Crystal Lake

Rock Island
Blackhawk Clay Products, Inc., Carbon Cliff

St. Clair
Hill Brick Co., 51st St. & St. Clair Ave., East St. Louis
Hydraulic-Press Brick Co., 705 Olive St., St. Louis 1, Missouri

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Companies and individuals reporting (as of July 1955) production for 1954, listed by counties in which operation occurred.

Sangamon
Poston Brick & Concrete Products Co., 2600 East South Grand Ave., Springfield
Springfield Clay Products Co., Springfield

Scott
Alsey Brick & Tile Co., Alsey

Tazewell
The Morton Pottery Co., 315 West Jefferson, Morton
Peoria Brick & Tile Co., Box 515, Peoria

Vermilion
General Refractories Co., 1520 Locust St., Philadelphia 2, Pennsylvania
Western Brick Co., Danville

Warren
Western Stoneware Co., 621 West 6th Ave., Monmouth

Will
General Refractories Co., 1520 Locust St., Philadelphia 2, Pennsylvania

SAND AND GRAVEL PRODUCERS 1954

Adams
Blick's Construction Co., Quincy
Quincy Sand Company, Quincy

Alexander
H. H. Halliday Sand Co., 224-226 10th St., Cairo

Bond
Greenville Gravel Co., Greenville
W. D. Lindsey, Keyesport
Cyril Munie, Pocahontas

Boone
Christensen & Smith, Capron
Vincent Spencer Sand & Gravel, 120 Burgess St., Belvidere

Brown
T. F. Hollembeak & Son, Mt. Sterling

Bureau
Floyd Clapp, Walnut
Hansen Brothers, New Bedford
Western Sand & Gravel Co., Spring Valley

Calhoun
Ellis Inman, Batchtown

Companies and individuals reporting (as of July 1955) production for 1954, listed by counties in which operation occurred.

Carroll
Howard Nelson, Lanark

Champaign
Gibson Brothers, 407 North Edwin St., Champaign
Mahomet Sand & Gravel Co., Inc., Box 65, Urbana
W. H. - G. R. Troike, Plankenhorn, Box 327, Mahomet
West Champaign Gravel Co., 404 North Neil St., Champaign

Clark
Barthelemy and Lawrence, R. R. 2, Box 120-A, West Union

Coles
Martin's Sand & Gravel, 527 Ninth St., Charleston
Pinnell's Gravel Pit, Charleston

Cook
Chicago Gravel Co., 343 South Dearborn St., Chicago 4
Worth Sand & Gravel Co., 7545 West 111th St., Worth

Crawford
Lawrence Bowman, 140 East Lamotte St., Palestine
William J. Wyke, Box 11, Robinson

Cumberland
A. B. C. Gravel Co., Greenup
George Orndorff, Route 1, Greenup

DeKalb
Elmer Larson, Inc., Box 383, 320 Prospect St., DeKalb

DeWitt
H. M. Rickgauer, Clinton

DuPage
Elmhurst-Chicago Stone Co., Elmhurst
John Purnell, Geneva Road, West Chicago

Fayette
Con L. Burtschi, Vandalia
Mulberry Grove Sand Co., Mulberry Grove
Weaver's Gravel Pit, R. F. D. 2, Vandalia

Ford
W. V. Williams, Box 287, Gibson City

Fulton
Liverpool Materials Co., 20 East Elm St., Canton

Gallatin
Miller Sand & Gravel Co., Carmi

Companies and individuals reporting (as of July 1955) production for 1954, listed by counties in which operation occurred.

Henry
Collinson Brothers, 240 27th St., Moline

Kane
H. D. Conkey & Co., Mendota
Fox Valley Gravel Co., Box 423, Route 3, Aurora
Warren W. Krahn, 724 South St., Dundee
L. G. Raymond, Big Rock
Warren T. Sellen, 344 Cedar St., Aurora

Kendall
Elmer Larson, Inc., Box 383, 320 Prospect St., DeKalb

Knox
L. K. Bandy Construction Co., Maquon

Lake
B & J Sand & Gravel, R. F. D. 1, Spring Grove
Carl L. Barthel, Antioch
Big Hollow Sand & Gravel Co., Inc., R. F. D., Ingleside
Consumers Co., 79 W. Monroe St., Chicago 3
Paul W. Schumaker, Box 185-B, Gurnee
Marvin Walker, R. R. 2, Box 3-A, Lake Villa

LaSalle
G. A. Abbott, Leland
Ray LaBolle, Somonauk
Edward O. Olson, Newark
River Industries Inc., Box 641, Seneca
Seneca Road Gravel Inc., Route 1, Marseilles
Spicer Gravel Co., 445 Union St., Marseilles

Lawrence
L. W. Gregory and Sons, Lawrenceville

Lee
Butler Sand & Gravel Co., Nelson
C. C. Macklin, Steward
Rock River Ready Mix, 206 Brinton Ave., Dixon

Livingston
Estep Gravel Co., 604 East Oak St., Fairbury
Valley View Dirt & Gravel Co., Route 1, Manville

Logan
The Lincoln Sand & Gravel Co., Arcade Annex, Lincoln

Macon
Decatur Sand & Gravel Co., 700 South Taylor Ave., Decatur
Kirks Gravel Pit, Route 6, Decatur
F. C. Troutman, Route 8, Decatur

Companies and individuals reporting (as of July 1955) production for 1954, listed by counties in which operation occurred.

Madison
Gary Dredging Co., 958 Union St., Alton
Guth Sand Co., Box 1170, Route 1, Granite City
Mississippi Lime Co. of Missouri, Alton

Marshall
Consumer's Co., 79 West Monroe St., Chicago 3
Vernon Henry, LaRose

McHenry
Consumer's Co., 79 West Monroe St., Chicago 3
Crystal Lake Trucking & Excavating Co., Route 14, Box 184, Crystal Lake
Floyd Greibel, Marengo
Grove Gravel & Excavating Co., Fox River Grove
McHenry Sand & Gravel Co., Inc., 606 Front St., McHenry
Wayne Nolan, R. F. D., Harvard
Sylvester Tonyan, R. R. 1, Box 371, McHenry

McLean
John Howes, Route 2, Bloomington
McGrath Sand & Gravel Co., Inc., Lincoln
Rowe Construction Co., 1523 West Market St., Bloomington

Ogle
Byron Sand & Stone Co., Byron
McGrath Sand & Gravel Co., Inc., Lincoln
Lloyd A. Shilling, Route 2, Milledgeville
Floyd Weigle, Shannon

Peoria
Chillicothe Gravel Co., 940 North Fourth St., Chillicothe
Construction Materials Co., 100 Cass St., Peoria
Coogan Gravel Co., 903 Jefferson Bldg., Peoria
McGrath Sand & Gravel Co., Inc., Lincoln
Stevers, Inc., 806 Farmington Road, Peoria
C. L. Swords, 107 South Jefferson Ave., Peoria

Pike
Victor Callender, Pittsfield

Randolph
Southern Illinois Sand Co., Inc., Chester

Rock Island
Blackhawk Aggregates, Inc., 230 4th St. West, Milan

St. Clair
Missouri-Illinois Material Co., 2100 North Wharf, St. Louis 6

Companies and individuals reporting (as of July 1955) production for 1954, listed by counties in which operation occurred.

Sangamon
Clear Lake Sand & Gravel Co., Box 378, Springfield
Springfield Sand & Gravel Co., Route 7, Springfield

Scott
Homer E. Grady, Exeter

Shelby
Corley Gravel, Cowden
Henry Cummings, Sullivan
Hanfland Sand & Gravel Co., Shelbyville

Tazewell
Hoffer Construction Co., end of Kenwood Street, East Peoria
McGrath Sand & Gravel Co., Inc., Lincoln
C. A. Powley, Route 2, Washington

Union
Bittle & Emrick, Anna

Vermilion
Blakeney Gravel Pit, Route 4, Danville
Lewis and Co., Perrisville Road, Danville
Vanderpoorten Brothers, 122 Delaware St., Westville
Elton A. Wagner Co., 505 North Gilbert St., Danville

Wabash
Allendale Gravel Co., Route 1, Allendale
Dunobar Sand-Gravel Co., Bellmont
Mt. Carmel Sand & Gravel Co., Mt. Carmel

White
Eastwood Sand & Gravel Works, Grayville
Frashier Brothers, Maunie
Miller Sand & Gravel Co., Carmi

Whiteside
Anderson Ready Mix, 903 Avenue "D," Rock Falls
Ernest Johnson, Box 67, Lyndon
Max Lawrence, R. F. D., Prophetstown
Weldon W. Lawrence, Prophetstown
Vernon Schrader Gravel, Route 2, Sterling
Vohn & Toppert River Bar Gravel, Lyndon

Will
Jesse Avery, Plainfield
Chicago Gravel Co., 343 South Dearborn St., Chicago 4
C. H. Monk, 211 Hunter St., Joliet

Companies and individuals reporting (as of July 1955) production for 1954, listed by counties in which operation occurred.

Winnebago

Anderson Sand & Gravel Co., 519 East State St., Rockford
Consumer's Co., 79 West Monroe St., Chicago 3
Illinois-Wisconsin Sand & Gravel Co., 228 North LaSalle St., Chicago
John L. Kelley, Roscoe
Northwest Gravel Co., 917 Main St., Evanston
Sahlstrom & Sons Bldg. Prod., 217 Peoples Ave., Rockford
South Beloit Sand Co., 228 North LaSalle St., Chicago 1

Woodford

John Keller & Sons, 611 State St., Eureka

PORTLAND AND MASONRY CEMENT PRODUCERS 1954

LaSalle

Alpha Portland Cement Co., 15 South Third St., Easton, Pennsylvania
Lehigh Portland Cement Co., Young Bldg., 718 Hamilton St., Allentow Pennsylvania
Marquette Cement Mfg. Co., 20 North Wacker Drive, Chicago 6

LIME PRODUCERS 1954

Adams

Marblehead Lime Co., 300 West Washington St., Chicago 6
Menke Stone & Lime Co., 828 Vermont St., Quincy

Cook

Marblehead Lime Co., 300 West Washington St., Chicago 6
The Standard Lime & Stone Co., 2000 1st Nat'l Bank Bldg., Baltimore Maryland

St. Clair

Aluminum Co. of America, 1501 Alcoa Bldg., 425 Sixth Ave., Pittsburg Pennsylvania

SILICA SAND PRODUCERS 1954

Alexander

Western Fire Brick Co., 16th & Madison, Granite City

LaSalle

The American Silica Sand Co., Inc., 402 Central Life Bldg., Ottawa
E. C. Bellrose Sand Co., 1220 West Madison St., Ottawa
Illinois Silica Sand Co., Box 36, Ottawa
LaSalle Silica Co., Box 437, Ottawa
Ottawa Silica Co., Box 437, Ottawa
George M. Pendergast & Co., 226 South First St., Milwaukee, Wisconsi
Standard Silica Corp., Box 407, Ottawa
Wedron Silica Co., 135 South LaSalle St., Chicago 3

Companies and individuals reporting (as of July 1955) production for 1954, listed by counties in which operation occurred.

Ogle
National Silica Co., Oregon

NATURAL BONDED MOLDING SAND PRODUCERS 1954

Bureau
Frank J. Poscharscky, Wyanet

Carroll
Albert A. Nicol, Box 209, Savanna

Coles
Martin's Sand and Gravel, 527 Ninth St., Charleston

Fayette
Charles D. Lutz & Sons, Mulberry Grove

Henry
Oberlaender Sand Co., 519 1/2 15th St., Moline

Kankakee
Portage-Manley Sand Co., Essex

TRIPOLI PRODUCERS 1954

Alexander
Ozark Minerals Co., 807 1/2 Washington Ave., Cairo

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CIRCULAR 206

ILLINOIS STATE GEOLOGICAL SURVEY

URBANA